

CONTAINS NO CBI



Form Approved  
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EPA-OTS



000622492P

90-890000 379

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
Comprehensive Assessment Information Rule  
REPORTING FORM

89 JUL -6 PM 3:23  
OTS Reporting Office

When completed, send this form to:

Document Processing Center  
Office of Toxic Substances, TS-790  
U.S. Environmental Protection Agency  
401 M Street, SW  
Washington, DC 20460  
Attention: CAIR Reporting Office

For Agency Use Only:

Date of Receipt: \_\_\_\_\_

Document  
Control Number: \_\_\_\_\_

Docket Number: \_\_\_\_\_

SECTION 1 GENERAL MANUFACTURER, IMPORTER, AND PROCESSOR INFORMATION

PART A GENERAL REPORTING INFORMATION

1.01 This Comprehensive Assessment Information Rule (CAIR) Reporting Form has been completed in response to the Federal Register Notice of..... [1][2] [2][2] [8][8]  
CBI mo. day year

☐ a. If a Chemical Abstracts Service Number (CAS No.) is provided in the Federal Register, list the CAS No. .... [0][2][6][4][7][1]-[6][2]-[5]

b. If a chemical substance CAS No. is not provided in the Federal Register, list either (i) the chemical name, (ii) the mixture name, or (iii) the trade name of the chemical substance as provided in the Federal Register.

(i) Chemical name as listed in the rule ..... N/A

(ii) Name of mixture as listed in the rule .... N/A

(iii) Trade name as listed in the rule ..... N/A

c. If a chemical category is provided in the Federal Register, report the name of the category as listed in the rule, the chemical substance CAS No. you are reporting on which falls under the listed category, and the chemical name of the substance you are reporting on which falls under the listed category.

Name of category as listed in the rule ..... N/A

CAS No. of chemical substance ..... [ ][ ][ ][ ][ ][ ]-[ ][ ]-[ ]

Name of chemical substance ..... N/A

1.02 Identify your reporting status under CAIR by circling the appropriate response(s).

CBI Manufacturer ..... 1

☐ Importer ..... 2

Processor ..... ③

X/P manufacturer reporting for customer who is a processor ..... 4

X/P processor reporting for customer who is a processor ..... 5

☐ Mark (X) this box if you attach a continuation sheet.

1.03 Does the substance you are reporting on have an "x/p" designation associated with it in the above-listed Federal Register Notice?

CBI

Yes ..... ☒ Go to question 1.04

☐

No ..... ☐ Go to question 1.05

1.04 a. Do you manufacture, import, or process the listed substance and distribute it under a trade name(s) different than that listed in the Federal Register Notice? Circle the appropriate response.

CBI

Yes ..... 1

☐

No ..... ②

b. Check the appropriate box below: N/A

☐ You have chosen to notify your customers of their reporting obligations

Provide the trade name(s) ....

☐ You have chosen to report for your customers

☐ You have submitted the trade name(s) to EPA one day after the effective date of the rule in the Federal Register Notice under which you are reporting.

1.05 If you buy a trade name product and are reporting because you were notified of your reporting requirements by your trade name supplier, provide that trade name.

CBI

Trade name ..... Voranate (R) T-80 Type I Toluene Diisocyanate  
Rubinate TDI

☐

Is the trade name product a mixture? Circle the appropriate response.

Yes ..... 1

No ..... ②

1.06 Certification -- The person who is responsible for the completion of this form must sign the certification statement below:

CBI

☐ "I hereby certify that, to the best of my knowledge and belief, all information entered on this form is complete and accurate."

Tom Prodouz

NAME

Plant Manager

TITLE

  
SIGNATURE

( 219 ) 925 - 1073

TELEPHONE NO.

6/28/89  
DATE SIGNED

☐ Mark (X) this box if you attach a continuation sheet.

1.07 Exemptions From Reporting -- If you have provided EPA or another Federal agency with the required information on a CAIR Reporting Form for the listed substance within the past 3 years, and this information is current, accurate, and complete for the time period specified in the rule, then sign the certification below. You are required to complete section 1 of this CAIR form and provide any information now required but not previously submitted. Provide a copy of any previous submissions along with your Section 1 submission.

CBI

☐

"I hereby certify that, to the best of my knowledge and belief, all required information which I have not included in this CAIR Reporting Form has been submitted to EPA within the past 3 years and is current, accurate, and complete for the time period specified in the rule."

N/A			
NAME	SIGNATURE	DATE SIGNED	
TITLE	( ) TELEPHONE NO.	DATE OF PREVIOUS SUBMISSION	

1.08 CBI Certification -- If you have asserted any CBI claims in this report you must certify that the following statements truthfully and accurately apply to all of those confidentiality claims which you have asserted.

CBI

☐

"My company has taken measures to protect the confidentiality of the information, and it will continue to take these measures; the information is not, and has not been, reasonably ascertainable by other persons (other than government bodies) by using legitimate means (other than discovery based on a showing of special need in a judicial or quasi-judicial proceeding) without my company's consent; the information is not publicly available elsewhere; and disclosure of the information would cause substantial harm to my company's competitive position."

N/A			
NAME	SIGNATURE	DATE SIGNED	
TITLE	( ) TELEPHONE NO.		

☐ Mark (X) this box if you attach a continuation sheet.

## 1.09 Facility Identification

Dun & Bradstreet Number .....[0]9]-[2]04]-[6]51]5]  
EPA ID Number .....IND.[0]9]2]04]6]51]5]  
Employer ID Number .....57.[-]0]3]5]8]8]0]0]  
Primary Standard Industrial Classification (SIC) Code .....[3]0]8]6]  
Other SIC Code .....[ ]][ ]]  
Other SIC Code .....[ ]][ ]]

Dun & Bradstreet Number ..... [0][0]-[1][5][1]-[9][5][0][3]  
Employer ID Number .....<sup>57</sup>[-][0][3][5][8][8][0][0]

6

CBI    Name   [ H ] [ A ] [ R ] [ T ]   [ ]   [ H ] [ O ] [ L ] [ D ] [ ]   [ N ] [ G ]   [ ]   [ C ] [ O ] [ M ] [ P ] [ A ] [ N ] [ Y ] [ ] ,   [ ]   [ ]   [ I ] [ N ] [ C ] [ ]

City

C T      0 6 8 2 0 --          
State                      Zip

## 1.12 Technical Contact

CBI    Name   [ D ] [ O ] [ N ] [ A ] [ L ] [ D ] [   ] [ W ] [ E ] [ A ] [ T ] [ H ] [ E ] [ R ] [ B ] [ E ] [ E ] [   ] [   ] [   ] [   ] [   ] [   ] [   ] [   ]

[ ] Title [ T ] [ E ] [ C ] [ H ] [ N ] [ I ] [ C ] [ A ] [ L ] [ ] [ D ] [ I ] [ R ] [ E ] [ C ] [ T ] [ O ] [ R ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Address [P][O][B][O][X][1][8][8] Street

City

[N] [C]      [2] [8] [0] [3] [1] -- [ ] [ ] [ ] [ ]  
State                      Zip

Telephone Number .....[7][0][4]-[8][9][2]-[8][0][8][1]

1.13 This reporting year is from ..... 0 1 8 8 to 1 2 8 8  
Mo. Year Mo. Year

☐ Mark (X) this box if you attach a continuation sheet.

[illegible]

N/A

[ ]  
City

[ ] [ ]    [ ] [ ] [ ] [ ] [ ] -- [ ] [ ] [ ] [ ]  
State Zip

Employer ID Number .....[ ][ ][ ][ ][ ][ ][ ][ ]

Date of Sale ..... ( ) ( ) ( ) ( ) ( ) ( )  
Mo. Day Year

[illegible]

Telephone Number .....[ ][ ]-[ ][ ]-[ ][ ][ ][ ]

[illegible]

N/A      [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]  
City  
[ ] [ ]    [ ] [ ] [ ] [ ] [ ] -- [ ] [ ] [ ] [ ]  
State                  Zip

Employer ID Number .....[ ][ ][ ][ ][ ][ ][ ][ ]

Date of Purchase ..... [ ] [ ] [ ] [ ] [ ] [ ]  
Mo. Day Year

[illegible]

Telephone Number .....[ ][ ]-[ ][ ]-[ ][ ][ ]

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1.16 For each classification listed below, state the quantity of the listed substance that was manufactured, imported, or processed at your facility during the reporting year.

CBI

<u>Classification</u>	<u>Quantity (kg/yr)</u>
<input type="checkbox"/> Manufactured .....	N/A
Imported .....	N/A
Processed (include quantity repackaged) .....	2871452
Of that quantity manufactured or imported, report that quantity:	
In storage at the beginning of the reporting year .....	N/A
For on-site use or processing .....	N/A
For direct commercial distribution (including export) .....	N/A
In storage at the end of the reporting year .....	N/A
Of that quantity processed, report that quantity:	
In storage at the beginning of the reporting year .....	250,736
Processed as a reactant (chemical producer) .....	N/A
Processed as a formulation component (mixture producer) .....	N/A
Processed as an article component (article producer) .....	2871452
Repackaged (including export) .....	N/A
In storage at the end of the reporting year .....	333839

☐ Mark (X) this box if you attach a continuation sheet.



1.17 Mixture -- If the listed substance on which you are required to report is a mixture or a component of a mixture, provide the following information for each component chemical. (If the mixture composition is variable, report an average percentage of each component chemical for all formulations.)

[ ]

Component Name	Supplier Name	Average % Composition by Weight (specify precision, e.g., 45% ± 0.5%)
N/A	N/A	N/A
		Total 100%

10

2.04 State the quantity of the listed substance that your facility manufactured, imported, or processed during the 3 corporate fiscal years preceding the reporting year in descending order.

CBI

☐ Year ending ..... ☐ ☐ ☐ ☐ ☐ ☐  
Mo. Year

Quantity manufactured ..... N/A kg

Quantity imported ..... N/A kg

Quantity processed ..... 2621520 kg

Year ending ..... ☐ ☐ ☐ ☐ ☐ ☐  
Mo. Year

Quantity manufactured ..... N/A kg

Quantity imported ..... N/A kg

Quantity processed ..... 2906321 kg

Year ending ..... ☐ ☐ ☐ ☐ ☐ ☐  
Mo. Year

Quantity manufactured ..... N/A kg

Quantity imported ..... N/A kg

Quantity processed ..... 3065723 kg

2.05 Specify the manner in which you manufactured the listed substance. Circle all appropriate process types.

CBI

☐ N/A

☐ Continuous process ..... 1

Semicontinuous process ..... 2

Batch process ..... 3

☐ Mark (X) this box if you attach a continuation sheet.

2.06 Specify the manner in which you processed the listed substance. Circle all appropriate process types.

- ☐ Continuous process ..... 1
- ☐ Semicontinuous process ..... 2
- ☐ Batch process ..... 3

2.07 State your facility's name-plate capacity for manufacturing or processing the listed substance. (If you are a batch manufacturer or batch processor, do not answer this question.)

- ☐ Manufacturing capacity ..... N/A kg/yr
- ☐ Processing capacity ..... UK kg/yr

2.08 If you intend to increase or decrease the quantity of the listed substance manufactured, imported, or processed at any time after your current corporate fiscal year, estimate the increase or decrease based upon the reporting year's production volume.

<input type="checkbox"/>	Manufacturing Quantity (kg)	Importing Quantity (kg)	Processing Quantity (kg)
Amount of increase	N/A	N/A	UK
Amount of decrease	N/A	N/A	UK

☐ Mark (X) this box if you attach a continuation sheet.

2.09 For the three largest volume manufacturing or processing process types involving the listed substance, specify the number of days you manufactured or processed the listed substance during the reporting year. Also specify the average number of hours per day each process type was operated. (If only one or two operations are involved, list those.)

CBI

☐

	<u>Days/Year</u>	<u>Average Hours/Day</u>
Process Type #1 (The process type involving the largest quantity of the listed substance.)		
Manufactured .....	<u>N/A</u>	<u>N/A</u>
Processed .....	<u>252</u>	<u>2.37</u>
Process Type #2 (The process type involving the 2nd largest quantity of the listed substance.)		
Manufactured .....	<u>N/A</u>	<u>N/A</u>
Processed .....	<u>260</u>	<u>16</u>
Process Type #3 (The process type involving the 3rd largest quantity of the listed substance.)		
Manufactured .....	<u>N/A</u>	<u>N/A</u>
Processed .....	<u>N/A</u>	<u>N/A</u>

2.10 State the maximum daily inventory and average monthly inventory of the listed substance that was stored on-site during the reporting year in the form of a bulk chemical.

CBI

☐

Maximum daily inventory ..... kg

Average monthly inventory ..... kg

☐ Mark (X) this box if you attach a continuation sheet.

- 2.11 Related Product Types -- List any byproducts, coproducts, or impurities present with the listed substance in concentrations greater than 0.1 percent as it is manufactured, imported, or processed. The source of byproducts, coproducts, or impurities means the source from which the byproducts, coproducts, or impurities are made or introduced into the product (e.g., carryover from raw material, reaction product, etc.).

CBI

☐

<u>CAS No.</u>	<u>Chemical Name</u>	<u>Byproduct, Coproduct or Impurity<sup>1</sup></u>	<u>Concentration (%) (specify <math>\pm</math> % precision)</u>	<u>Source of By-products, Coproducts, or Impurities</u>
UK	UK	UK	UK	UK

<sup>1</sup>Use the following codes to designate byproduct, coproduct, or impurity:

B = Byproduct  
C = Coproduct  
I = Impurity

☐ Mark (X) this box if you attach a continuation sheet.

- 2.12 Existing Product Types -- List all existing product types which you manufactured, imported, or processed using the listed substance during the reporting year. List the quantity of listed substance you use for each product type as a percentage of the total volume of listed substance used during the reporting year. Also list the quantity of listed substance used captively on-site as a percentage of the value listed under column b., and the types of end-users for each product type. (Refer to the instructions for further explanation and an example.)

CBI  
[ ]

a. Product Types <sup>1</sup>	b. % of Quantity Manufactured, Imported, or Processed	c. % of Quantity Used Captively On-Site	d. Type of End-Users <sup>2</sup>
B	93.69	100	N/A
K	6.31	100	N/A

<sup>1</sup>Use the following codes to designate product types:

A = Solvent	L = Moldable/Castable/Rubber and additives
B = Synthetic reactant	M = Plasticizer
C = Catalyst/Initiator/Accelerator/ Sensitizer	N = Dye/Pigment/Colorant/Ink and additives
D = Inhibitor/Stabilizer/Scavenger/ Antioxidant	O = Photographic/Reprographic chemical and additives
E = Analytical reagent	P = Electrodeposition/Plating chemicals
F = Chelator/Coagulant/Sequestrant	Q = Fuel and fuel additives
G = Cleanser/Detergent/Degreaser	R = Explosive chemicals and additives
H = Lubricant/Friction modifier/Antiwear agent	S = Fragrance/Flavor chemicals
I = Surfactant/Emulsifier	T = Pollution control chemicals
J = Flame retardant	U = Functional fluids and additives
K = Coating/Binder/Adhesive and additives	V = Metal alloy and additives
	W = Rheological modifier
	X = Other (specify) _____

<sup>2</sup>Use the following codes to designate the type of end-users:

I = Industrial	CS = Consumer
CM = Commercial	H = Other (specify) _____

[ ] Mark (X) this box if you attach a continuation sheet.

- 2.13 Expected Product Types -- Identify all product types which you expect to manufacture, import, or process using the listed substance at any time after your current corporate fiscal year. For each use, specify the quantity you expect to manufacture, import, or process for each use as a percentage of the total volume of listed substance used during the reporting year. Also list the quantity of listed substance used captively on-site as a percentage of the value listed under column b., and the types of end-users for each product type. (Refer to the instructions for further explanation and an example.)

CBI

☐

a.	b.	c.	d.
Product Types <sup>1</sup>	% of Quantity Manufactured, Imported, or Processed	% of Quantity Used Captively On-Site	Type of End-Users <sup>2</sup>
B	93.69	100	N/A
K	6.31	100	N/A

<sup>1</sup>Use the following codes to designate product types:

A = Solvent	L = Moldable/Castable/Rubber and additives
B = Synthetic reactant	M = Plasticizer
C = Catalyst/Initiator/Accelerator/ Sensitizer	N = Dye/Pigment/Colorant/Ink and additives
D = Inhibitor/Stabilizer/Scavenger/ Antioxidant	O = Photographic/Reprographic chemical and additives
E = Analytical reagent	P = Electrodeposition/Plating chemicals
F = Chelator/Coagulant/Sequestrant	Q = Fuel and fuel additives
G = Cleanser/Detergent/Degreaser	R = Explosive chemicals and additives
H = Lubricant/Friction modifier/Antiwear agent	S = Fragrance/Flavor chemicals
I = Surfactant/Emulsifier	T = Pollution control chemicals
J = Flame retardant	U = Functional fluids and additives
K = Coating/Binder/Adhesive and additives	V = Metal alloy and additives
	W = Rheological modifier
	X = Other (specify) _____

<sup>2</sup>Use the following codes to designate the type of end-users:

I = Industrial	CS = Consumer
CM = Commercial	H = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

2.14 Final Product -- Complete the following table for each type of final product manufactured, imported, or processed at your facility that contains the listed substance other than as an impurity.

☐

a.	b.	c.	d.
Product Type <sup>1</sup>	Final Product's Physical Form <sup>2</sup>	Average % Composition of Listed Substance in Final Product	Type of End-Users <sup>3</sup>
N/A	N/A	N/A	N/A

<sup>1</sup>Use the following codes to designate product types:

A = Solvent	L = Moldable/Castable/Rubber and additives
B = Synthetic reactant	M = Plasticizer
C = Catalyst/Initiator/Accelerator/Sensitizer	N = Dye/Pigment/Colorant/Ink and additives
D = Inhibitor/Stabilizer/Scavenger/Antioxidant	O = Photographic/Reprographic chemical and additives
E = Analytical reagent	P = Electrodeposition/Plating chemicals
F = Chelator/Coagulant/Sequestrant	Q = Fuel and fuel additives
G = Cleanser/Detergent/Degreaser	R = Explosive chemicals and additives
H = Lubricant/Friction modifier/Antiwear agent	S = Fragrance/Flavor chemicals
I = Surfactant/Emulsifier	T = Pollution control chemicals
J = Flame retardant	U = Functional fluids and additives
K = Coating/Binder/Adhesive and additives	V = Metal alloy and additives
	W = Rheological modifier
	X = Other (specify) _____

<sup>2</sup>Use the following codes to designate the final product's physical form:

A = Gas	F2 = Crystalline solid
B = Liquid	F3 = Granules
C = Aqueous solution	F4 = Other solid
D = Paste	G = Gel
E = Slurry	H = Other (specify) _____
F1 = Powder	

<sup>3</sup>Use the following codes to designate the type of end-users:

I = Industrial	CS = Consumer
CM = Commercial	H = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.



2.15 Circle all applicable modes of transportation used to deliver bulk shipments of the  
CBI listed substance to off-site customers.

☐ Truck ..... 1  
N/A Railcar ..... 2  
Barge, Vessel ..... 3  
Pipeline ..... 4  
Plane ..... 5  
Other (specify) ..... 6

2.16 Customer Use -- Estimate the quantity of the listed substance used by your customers  
CBI or prepared by your customers during the reporting year for use under each category  
of end use listed (i-iv).

☐

Category of End Use

i. Industrial Products

Chemical or mixture ..... N/A kg/yr

Article ..... N/A kg/yr

ii. Commercial Products

Chemical or mixture ..... N/A kg/yr

Article ..... N/A kg/yr

iii. Consumer Products

Chemical or mixture ..... N/A kg/yr

Article ..... N/A kg/yr

iv. Other

Distribution (excluding export) ..... N/A kg/yr

Export ..... N/A kg/yr

Quantity of substance consumed as reactant ..... N/A kg/yr

Unknown customer uses ..... N/A kg/yr

☐ Mark (X) this box if you attach a continuation sheet.

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SECTION 3 PROCESSOR RAW MATERIAL IDENTIFICATION

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PART A GENERAL DATA

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- 3.01 Specify the quantity purchased and the average price paid for the listed substance for each major source of supply listed. Product trades are treated as purchases.  
CBI The average price is the market value of the product that was traded for the listed substance.

☐

<u>Source of Supply</u>	<u>Quantity (kg)</u>	<u>Average Price (\$/kg)</u>
The listed substance was manufactured on-site.	N/A	N/A
The listed substance was transferred from a different company site.	N/A	N/A
The listed substance was purchased directly from a manufacturer or importer.	2871452	2.51
The listed substance was purchased from a distributor or repackager.	N/A	N/A
The listed substance was purchased from a mixture producer.	N/A	N/A

- 3.02 Circle all applicable modes of transportation used to deliver the listed substance to your facility.

CBI

☐

- Truck ..... ①  
Railcar ..... ②  
Barge, Vessel ..... 3  
Pipeline ..... 4  
Plane ..... 5  
Other (Specify) ..... 6

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☐ Mark (X) this box if you attach a continuation sheet.

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3.03 a. Circle all applicable containers used to transport the listed substance to your facility.  
CBI

☐

Bags ..... 1  
Boxes ..... 2  
Free standing tank cylinders ..... 3  
Tank rail cars ..... (4)  
Hopper cars ..... 5  
Tank trucks ..... (6)  
Hopper trucks ..... 7  
Drums ..... 8  
Pipeline ..... 9  
Other (specify) \_\_\_\_\_ 10

b. If the listed substance is transported in pressurized tank cylinders, tank rail cars, or tank trucks, state the pressure of the tanks.

Tank cylinders ..... N/A mmHg  
Tank rail cars ..... N/A mmHg  
Tank trucks ..... N/A mmHg

☐ Mark (X) this box if you attach a continuation sheet.

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PART B RAW MATERIAL IN THE FORM OF A MIXTURE

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3.04 If you obtain the listed substance in the form of a mixture, list the trade name(s) of the mixture, the name of its supplier(s) or manufacturer(s), an estimate of the average percent composition by weight of the listed substance in the mixture, and the amount of mixture processed during the reporting year.

CBI

☐

<u>Trade Name</u>	<u>Supplier or Manufacturer</u>	<u>Average % Composition by Weight (specify <math>\pm</math> % precision)</u>	<u>Amount Processed (kg/yr)</u>
N/A	N/A	N/A	N/A

---

☐ Mark (X) this box if you attach a continuation sheet.

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PART C RAW MATERIAL VOLUME

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3.05 State the quantity of the listed substance used as a raw material during the  
CBI reporting year in the form of a class I chemical, class II chemical, or polymer, and  
the percent composition, by weight, of the listed substance.

☐

	Quantity Used (kg/yr)	% Composition by Weight of Listed Sub- stance in Raw Material (specify $\pm$ % precision)
Class I chemical	2871452	100
Class II chemical	N/A	N/A
Polymer	N/A	N/A

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☐ Mark (X) this box if you attach a continuation sheet.

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SECTION 4 PHYSICAL/CHEMICAL PROPERTIES

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General Instructions:

If you are reporting on a mixture as defined in the glossary, reply to questions in Section 4 that are inappropriate to mixtures by stating "NA -- mixture."

For questions 4.06-4.15, if you possess any hazard warning statement, label, MSDS, or other notice that addresses the information requested, you may submit a copy or reasonable facsimile in lieu of answering those questions which it addresses.

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PART A PHYSICAL/CHEMICAL DATA SUMMARY

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- 4.01 Specify the percent purity for the three major<sup>1</sup> technical grade(s) of the listed substance as it is manufactured, imported, or processed. Measure the purity of the substance in the final product form for manufacturing activities, at the time you import the substance, or at the point you begin to process the substance.

CBI

☐

	<u>Manufacture</u>	<u>Import</u>	<u>Process</u>
Technical grade #1	<u>N/A</u> % purity	<u>N/A</u> % purity	<u>99.9</u> % purity
Technical grade #2	<u>N/A</u> % purity	<u>N/A</u> % purity	<u>N/A</u> % purity
Technical grade #3	<u>N/A</u> % purity	<u>N/A</u> % purity	<u>N/A</u> % purity

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<sup>1</sup>Major = Greatest quantity of listed substance manufactured, imported or processed.

- 4.02 Submit your most recently updated Material Safety Data Sheet (MSDS) for the listed substance, and for every formulation containing the listed substance. If you possess an MSDS that you developed and an MSDS developed by a different source, submit your version. Indicate whether at least one MSDS has been submitted by circling the appropriate response.

Yes ..... ①

No ..... 2

Indicate whether the MSDS was developed by your company or by a different source.

Your company ..... 1

Another source ..... ②

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☐ Mark (X) this box if you attach a continuation sheet.

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M A T E R I A L   S A F E T Y   D A T A   S H E E T

Dow Chemical U.S.A.\*   Midland, MI 48674   Emergency Phone: 517-636-4400

Product Code: 92098   Page: 1  
PRODUCT NAME: VORANATE (R) T-80 TYPE II TOLUENE DIISOCYANATE

Effective Date: 12/13/88   Date Printed: 05/03/89   MSD: 000609

1. INGREDIENTS: (% w/w, unless otherwise noted)

Toluene-2,4-diisocyanate (TDI)	CAS# 000584-84-9	80%
Toluene-2,6-diisocyanate	CAS# 000091-08-7	20%

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

2. PHYSICAL DATA:

BOILING POINT: 250C (482F)  
VAP PRESS: 0.01 mmHg @ 20C  
VAP DENSITY: 6.0  
SOL. IN WATER: Insoluble  
SP. GRAVITY: 1.22 @ 25/15.5C  
APPEARANCE: Water white to pale yellow liquid.  
ODOR: Sharp pungent odor.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: 127C (260F)  
METHOD USED: PMCC, ASTM D-93

FLAMMABLE LIMITS

LFL: Not determined  
UFL: Not determined

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical, or foam.  
If water is used, it should be in very large quantity.  
The reaction between water and hot isocyanate may be vigorous.

FIRE & EXPLOSION HAZARDS: Down-wind personnel must be evacuated.  
Do not reseal contaminated containers since pressure build-up may cause rupture. Fire point: 146C (295F).

FIRE-FIGHTING EQUIPMENT: People who are fighting isocyanate fires must be protected against nitrogen oxide fumes and isocyanate vapors by wearing positive pressure self-contained breathing

(Continued on Page 2)

(R) Indicates a Trademark of The Dow Chemical Company

\* An Operating Unit Of The Dow Chemical Company

M A T E R I A L   S A F E T Y   D A T A   S H E E T

Dow Chemical U.S.A.\*   Midland, MI 48674   Emergency Phone: 517-636-4400

Product Code: 92098   Page: 2  
PRODUCT NAME: VORANATE (R) T-80 TYPE II TOLUENE DIISOCYANATE

Effective Date: 12/13/88   Date Printed: 05/03/89   MSD: 000609

3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

apparatus and full protective clothing.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID). Stable when stored under recommended storage conditions. Store in a dry place at temperatures between 18-41C (65-105F).

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Water, acid, base, alcohols, metal compounds, surface active materials. Avoid water as it reacts to form heat, CO<sub>2</sub> and insoluble urea. The combined effect of the CO<sub>2</sub> and heat can produce enough pressure to rupture a closed container.

HAZARDOUS DECOMPOSITION PRODUCTS: Isocyanate vapor and mist, carbon dioxide, carbon monoxide, nitrogen oxides and traces of hydrogen cyanide.

HAZARDOUS POLYMERIZATION: May occur with incompatible reactants, especially strong bases, water or temperatures over 41C (105F).

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS:

Evacuate and ventilate spill area, dike spill to prevent entry into water system, wear full protective equipment including respiratory equipment during clean up.

Major spill: Call Dow Chemical U.S.A. (409) 238-2112. If transportation spill involved call CHEMTREC (800) 424-9300. If temporary control of isocyanate vapor is required a blanket of protein foam (available at most fire departments) may be placed over the spill. Large quantities may be pumped into closed but not sealed containers for disposal.

Minor spill: Absorb the isocyanate with sawdust or other absorbent and shovel into open top containers. Do not make pressure tight. Transport to a well-ventilated area (outside) and treat with neutralizing solution consisting of a mixture of

(Continued on Page 3)

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5. ENVIRONMENTAL AND DISPOSAL INFORMATION: (CONTINUED)

water and 3-8% concentrated ammonium hydroxide or 5-10% sodium carbonate. Add about 10 parts of neutralizer per part of isocyanate with mixing. Allow to stand for 48 hours letting evolved carbon dioxide to escape.

Clean-up: Decontaminate floor using water/ammonia solution with 1-2% added detergent letting stand over affected area for at least 10 minutes. Cover mops and brooms used for this with plastic and dispose properly (often by incineration).

DISPOSAL METHOD: Follow all federal, state and local regulations. Liquids are usually incinerated in a proper facility. Solids are usually also incinerated or landfilled. Empty drums should be filled with water. Let drum stand unsealed for 48 hours. Before disposal drums should be drained, triple rinsed, and holed to prevent reuse. Dispose of drain and rinse fluid according to federal, state and local laws and regulations. The most commonly accepted method is in an approved wastewater treatment facility. Drums should be disposed of in accordance with federal, state and local laws and regulations. Commonly accepted methods for disposal of plastic drums are disposal in an approved landfill after shredding or incineration in an approved industrial incinerator or other appropriate incinerator facility. Steel drums are commonly disposed in an approved landfill after crushing or in accordance with other approved procedures.

6. HEALTH HAZARD DATA:

EYE: May cause pain, severe eye irritation and moderate corneal injury. Vapors may irritate eyes.

SKIN CONTACT: Prolonged or repeated exposure may cause severe irritation, even a burn. Skin contact may result in allergic reaction even though it is not expected to result in absorption of amounts sufficient to cause other adverse effects.

SKIN ABSORPTION: The LD50 for skin absorption in rabbits is >9400 mg/kg.

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Effective Date: 12/13/88   Date Printed: 05/03/89   MSD: 000609

6. HEALTH HAZARD DATA: (CONTINUED)

INGESTION: Single dose oral toxicity is low. The oral LD50 for rats is 5800 mg/kg. Ingestion may cause gastrointestinal irritation or ulceration.

INHALATION: Excessive vapor concentrations are attainable and could be hazardous on single exposure. Single and repeated excessive exposure may cause severe irritation to upper respiratory tract and lungs (choking sensation, chest tightness), respiratory sensitization, decreased ventilatory capacity, liver effects, cholinesterase depression, gastrointestinal distress and/or neurologic disorders. The 4-hour LC50 for TDI for rats is 13.9 ppm.

SYSTEMIC & OTHER EFFECTS: Based on available data, repeated exposures are not anticipated to cause any additional significant adverse effects. For hazard communication purposes under OSHA standard 29 CFR Part 1910.1200, this chemical is listed as a potential carcinogen by Nat'l. Tox. Program and IARC. An oral study in which high doses of TDI were reported to cause cancer in animals has been found to contain numerous deficiencies which compromise the validity of the study. TDI did not cause cancer in laboratory animals exposed by inhalation, the most likely route of exposure. Birth defects are unlikely. Exposures having no effect on the mother should have no effect on the fetus. Did not cause birth defects in animals; other effects were seen in the fetus only at doses which caused toxic effects to the mother. Results of in vitro ("test tube") mutagenicity tests have been inconclusive.

7. FIRST AID:

EYES: Irrigate with flowing water immediately and continuously for 15 minutes. Consult medical personnel.

SKIN: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician if irritation persists. Wash clothing before reuse. Destroy contaminated shoes.

INGESTION: Do not induce vomiting. Call a physician and/or

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7. FIRST AID: (CONTINUED)

transport to emergency facility immediately.

INHALATION: Remove to fresh air. If not breathing, give mouth-to-mouth resuscitation. If breathing is difficult, give oxygen. Call a physician.

NOTE TO PHYSICIAN: May cause tissue destruction leading to stricture. If lavage is performed, suggest endotracheal and/or esophagosopic control. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient. The manifestations of the respiratory symptoms, including pulmonary edema, resulting from acute exposure may be delayed. May cause respiratory sensitization. Cholinesterase inhibition has been noted in human exposure but is not of benefit in determining exposure and is not correlated with signs of exposure.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): OSHA PEL is 0.02 ppm as a ceiling limit for toluene 2,4-diisocyanate. ACGIH TLV is 0.005 ppm; 0.02 ppm STEL for toluene 2,4-diisocyanate. Dow Industrial Hygiene Guide is 0.02 ppm as a ceiling limit for toluene diisocyanate.

VENTILATION: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved supplied-air respirator. For emergency and other conditions where the exposure guideline may be greatly exceeded, use an approved positive-pressure self-contained breathing apparatus.

SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, or full-body suit will depend on operation. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse. Safety shower should

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8. HANDLING PRECAUTIONS: (CONTINUED)

be located in immediate work area.

EYE PROTECTION: Use chemical goggles. If vapor exposure causes eye irritation, use a full-face, supplied-air respirator. Eye wash fountain should be located in immediate work area.

9. ADDITIONAL INFORMATION:

REGULATORY REQUIREMENTS:

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard  
A delayed health hazard  
A reactive hazard

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Warning properties of this material (irritation of eyes, nose and throat) not adequate to prevent chronic overexposure from inhalation. This material can produce asthmatic sensitization upon either single inhalation exposure to a relatively high concentration or upon repeated inhalation exposure to lower concentrations. Exposures to vapors of heated TDI can be extremely dangerous. (Have TDI neutralizer available for spills.)

MSDS STATUS: Revised Section 9

SARA 313 INFORMATION:

This product contains the following substances subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

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# M A T E R I A L   S A F E T Y   D A T A   S H E E T

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PRODUCT NAME: VORANATE (R) T-80 TYPE II TOLUENE DIISOCYANATE   Product Code: 92098   Page: 7

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## 9. ADDITIONAL INFORMATION: (CONTINUED)

CHEMICAL NAME	CAS NUMBER	CONCENTRATION
TOLUENE-2,6-DIISOCYANATE	000091-08-7	20 %
TOLUENE-2,4-DIISOCYANATE	000584-84-9	80 %

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# MATERIAL SAFETY DATA SHEET

## ICI Polyurethanes Group

West Deptford, New Jersey 08066

Phone, 24 hours: (302) 575-3000

Medical Inquiries: (800) 327-8633

2290

07080R

Rev.: F

Date: 02/06/89

### SECTION 1 NAME & HAZARD SUMMARY

Material name: RUBINATE TDI

Hazard summary (as defined by OSHA Hazard Comm. Std., 29 CFR 1910.1200):

Physical hazards: Unstable.

Health hazards: Corrosive (eye), irritant (skin, respiratory passages, skin sensitizer), inhalation (TLV), harmful pulmonary (lung) sensitizer. Based on TDI - harmful (respiratory sensitizer, lung injury).

Read the entire MSDS for a more thorough evaluation of the hazards.

### SECTION 2 INGREDIENTS

	%	TLV (ACGIH)
Toluene diisocyanate, 2,4-isomer (CAS 584-84-9)	80	0.005 ppm
Toluene diisocyanate, 2,6-isomer (CAS 91-08-7)	20	Not listed

Ingredients not precisely identified are proprietary or nonhazardous. Values are not product specifications.

### SECTION 3 PHYSICAL DATA

Appearance and odor: Clear, colorless liquid with sharp odor

Boiling point: 484°F, 251.1°C

Vapor pressure (mm Hg at 20°C): 0.02

Vapor density (air = 1): 6.0

Solubility in water: Reacts

pH: No data

Specific gravity: 1.22

% Volatile by volume: No data

### SECTION 4 FIRE AND EXPLOSION HAZARD DATA

Flash point: 270°F, 132°C (OC)

Autoignition temperature: No data

Flammable limits (STP): 0.9-9.5%

Extinguishing media:

Dry chemical, foam, carbon dioxide, halogenated agents. If water is used, use very large quantities. The reaction between water and hot isocyanate may be vigorous.

Special fire fighting protective equipment:

Self-contained breathing apparatus with full facepiece and protective clothing.

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**SECTION 4 FIRE AND EXPLOSION HAZARD DATA (continued)**

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**Unusual fire and explosion hazards:**

Water contamination will produce carbon dioxide. Do not reseal contaminated containers as pressure buildup may rupture them.

---

**SECTION 5 REACTIVITY DATA**

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**Stability:**

Stable under normal conditions.

---

**Incompatibility:**

This product will react with any materials containing active hydrogens, such as water, alcohol, ammonia, amines, alkalies and acids. The reaction with water is very slow under 50°C, but is accelerated at higher temperatures and in the presence of alkalies, tertiary amines, and metal compounds. Some reactions can be violent.

---

**Hazardous decomposition products:**

Combustion products: Carbon dioxide, carbon monoxide. Nitrogen oxides, ammonia. Trace amounts of hydrogen cyanide.

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**Hazardous polymerization:**

May occur. High temperatures in the presence of alkalies, tertiary amines, and metal compounds will accelerate polymerization. Possible evolution of carbon dioxide gas may rupture closed containers.

---

**SECTION 6 HEALTH HAZARD ASSESSMENT**

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**General:**

The health hazard assessment is based on an evaluation of the chemical composition together with information from a search of the scientific literature and other commercial sources.

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**Ingestion:**

The acute oral LD50 in rat is reported to be 5,800 mg/kg. Relative to other materials, this material is classified as "practically nontoxic" by ingestion. In humans, irritation or chemical burns of the mouth, pharynx, esophagus and stomach can develop following ingestion. Injury may be severe and cause death.

---

**Eye contact:**

This material is reported to induce chemical burns in rabbit eye studies; a similar degree of eye injury may develop after contact with human eyes.

---

**Skin contact:**

This material is reported to be severely irritating in rabbit dermal irritation studies and will probably irritate human skin. Skin sensitization and irritation may develop after repeated and/or prolonged contact with human skin.

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**Skin absorption:**

The acute dermal LD50 in rabbit is reported to be above 16 g/kg. Systemically toxic concentrations of this product will probably not be absorbed through human skin.

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**SECTION 6 HEALTH HAZARD ASSESSMENT (continued)**

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**Inhalation:**

Vapors and aerosols can irritate eyes, nose and respiratory passages. TDI vapors are easily generated and are lethal to rats via inhalation at concentrations below 10 ppm. A no effect level for rats of about 0.1 ppm was determined from a subacute study. This and other data indicate the vapors and aerosols of TDI are highly toxic relative to the vapors of other compounds. Vapors and aerosols of TDI strongly irritate the upper and lower respiratory tract. Human experience indicates that TDI will induce an asthma-like respiratory sensitization in some individuals. If applications which involve spraying (e.g. aerosols and mists) or if elevated temperatures are used, even higher vapor concentrations may result and introduce a greater degree of risk of inhalation injury. Rat and mouse toxicity and carcinogenicity studies were conducted with two years of inhalation exposure to vapors of TDI at concentrations of 0.05 and 0.15 ppm. No indication of carcinogenic effect was observed. However, mice exposed to 0.15 ppm for two years showed reduced weight gain and signs of irritation in the upper and lower respiratory tract. No other effect of toxicological significance was observed.

---

**Other effects of overexposure:**

There are two studies which allege that workers exposed to TDI at or near the current TLV have experienced impaired ventilatory capacities. These findings have not been independently substantiated. The National Toxicology Program (NTP) 4th Annual Report on Carcinogens (1985) lists TDI as a substance that may reasonably be anticipated to be a carcinogen based on a NTP Technical Report. In the cited study, laboratory animals gavaged TDI in corn oil developed cancer. In our view, the inhalation study is of more potential biological relevance to man.

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**First aid procedures:**

Skin: Wash material off of the skin with plenty of soap and water. If redness, itching, or a burning sensation develops, get medical attention. Wash contaminated clothing and decontaminate footwear before reuse.

Eyes: Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Have eyes examined and treated by medical personnel.

Ingestion: Do not induce vomiting. Give 1 or 2 glasses of water to drink and refer person to medical personnel. (Never give anything by mouth to an unconscious person.)

Inhalation: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is labored, give oxygen. Consult medical personnel.

Note to physician: Probable mucosal damage may contraindicate the use of gastric lavage following ingestion.

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**SECTION 7 SPILL OR LEAK PROCEDURES**

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Steps to be taken in case material is released or spilled:

Wear skin, eye, and respiratory protection during cleanup. Soak up material with absorbent and shovel into a chemical waste container. Cover container, but do not seal, and remove from work area. Prepare a decontamination solution of 0.2-5% liquid detergent and 3-8% concentrated ammonium hydroxide in water (5-10% sodium carbonate may be substituted for the ammonium hydroxide). Follow the precautions on the supplier's material safety data sheets. All operations should be performed by trained personnel familiar with the hazards of the chemicals used. Treat the spill area with the decontamination solution, using about 10 parts of solution for each part of the spill, and allow it to react for at least 10 minutes. Carbon dioxide will be evolved, leaving insoluble polyureas. For major spills, call CHEMTREC (Chemical Transportation Emergency Center) at 800-424-9300.

---

**Disposal method:**

Slowly stir the isocyanate waste into the decontamination solution described above using 10 parts of the solution for each part of the isocyanate. Let stand for 48 hours, allowing the evolved carbon dioxide to vent away. Neutralize the waste. Neither the solid nor the liquid portion is a hazardous waste under RCRA, 40 CFR 261.

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**Container disposal:**

Drums must be decontaminated in properly ventilated areas by personnel protected from the inhalation of isocyanate vapors. Spray or pour 5-15 liters of decontaminating solution into the drum, making sure the walls are well rinsed. Leave the drum soaking unsealed for 48 hours. Pour out the decontaminating solution and triple rinse the empty container. Puncture or otherwise destroy the rinsed container before disposal.

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**SECTION 8 SPECIAL PROTECTION INFORMATION**

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**TLV® or suggested control value:**

The ACGIH TLV, OSHA PEL, and NIOSH recommendation for TDI is 0.005 ppm 8-hour TWA, 0.02 ppm STEL.

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**Ventilation:**

If needed, use local exhaust ventilation to keep airborne concentrations below the TLV. Follow guidelines in the ACGIH publication "Industrial Ventilation". Exhaust air may need to be cleaned by scrubbers or filters to reduce environmental contamination.

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**Respiratory protection:**

Because of the low vapor pressure, ventilation is usually sufficient to keep vapors below the TLV at room temperatures. Exceptions are when the material is sprayed or heated. If airborne concentrations exceed or are expected to exceed the TLV, use MSHA/NIOSH approved positive pressure supplied air respirator with a full facepiece or an air supplied hood. For emergencies, use a positive pressure self-contained breathing apparatus. Air purifying (cartridge type) respirators are not approved for protection against isocyanates.

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**SECTION 8 SPECIAL PROTECTION INFORMATION (continued)**

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**Protective clothing:**

Gloves determined to be impervious under the conditions of use. Depending on conditions of use, additional protection may be required such as apron, arm covers, or full body suit. Wash contaminated clothing before rewearing. The literature indicates that clothing constructed of butyl rubber, Viton, Silver Shield, Saranex coated Tyvek, as well as some nitrile rubber and polyvinyl alcohol (PVA) coated garments have excellent resistance to permeation by TDI. Clothing constructed of Teflon, as well as some garments constructed of nitrile rubber, natural rubber and PVA exhibited limited resistance to permeation by TDI. Some clothing constructed of natural rubber or polyethylene exhibited little resistance to permeation by TDI. Protective clothing should be selected and used in accordance with "Guidelines for the Selection of Chemical Protective Clothing" published by ACGIH.

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**Eye protection:**

Chemical tight goggles and full faceshield.

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**Other protective equipment:**

Eyewash station and safety shower in work area.

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**SECTION 9 SPECIAL PRECAUTIONS OR OTHER COMMENTS**

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**Special precautions or other comments:**

Prevent skin and eye contact. Observe TLV limitations. Avoid breathing vapors or aerosols. Workers should shower and change to fresh clothing after each shift. A sensitized individual should not be exposed to the product which caused the sensitization. Store in tightly sealed containers to protect from atmospheric moisture. Store in a cool area. Individuals with existing respiratory disease such as chronic bronchitis, emphysema or asthma should not be exposed to isocyanates. These individuals should be identified through baseline and annual evaluation and removed from further exposure. Medical examination should include medical history, vital capacity, and forced expiratory volume at one second.

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**SECTION 10 REGULATORY INFORMATION**

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TSCA (Toxic Substances Control Act) Regulations, 40 CFR 710:

All ingredients are on the TSCA Section 8(b) Inventory.

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CERCLA and SARA Regulations (40 CFR 355, 370, and 372):

Section 313 Supplier Notification. This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372: 100% TDI (CAS 584-84-9 and 91-08-7).

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**State Regulations:**

California Proposition 65: No warnings are necessary.

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The information herein is given in good faith  
but no warranty, expressed or implied, is made.

---

# MATERIAL SAFETY DATA SHEET

**Mobay Corporation**  
A Bayer USA INC COMPANY

**Bayer**

DIVISION ADDRESS

MOBAY CORPORATION  
Polyurethane Division  
Mobay Road  
Pittsburgh, PA 15205-9741

ISSUE DATE  
SUPERSEDES

1/2/89  
1/12/87

TRANSPORTATION EMERGENCY: CALL CHEMTREC  
TELEPHONE NO: 800-424-9300; DISTRICT OF COLUMBIA: 202-483-7616

MOBAY NON-TRANSPORTATION EMERGENCY NO.:  
(412) 923-1800

## I. PRODUCT IDENTIFICATION

PRODUCT NAME.....: Mondur TD  
PRODUCT CODE NUMBER.....: E-001  
CHEMICAL FAMILY.....: Aromatic Isocyanate  
CHEMICAL NAME.....: Toluene Diisocyanate (TDI)  
SYNONYMS.....: Benzene,1,3-Diisocyanato Methyl-  
CAS NUMBER.....: 26471-62-5  
T.S.C.A. STATUS.....: This product is listed on the TSCA Inventory.  
OSHA HAZARD COMMUNICATION  
STATUS.....: This product is hazardous under the criteria of  
the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.  
CHEMICAL FORMULA.....:  $C_9H_6N_2O_2$

## II. HAZARDOUS INGREDIENTS

COMPONENTS:	%:	OSHA-PEL	ACGIH-TLV
2,4-Toluene Diisocyanate (TDI) CAS# 584-84-9	65	0.02 ppm Ceiling	0.005 ppm TWA 0.02 ppm STEL
2,6-Toluene Diisocyanate (TDI) CAS# 91-08-7	35	Not Established	Not Established

## III. PHYSICAL DATA

APPEARANCE.....: Liquid  
COLOR.....: Water White to Pale Yellow  
ODOR.....: Sharp, Pungent  
ODOR THRESHOLD.....: Greater than TLV of 0.005 ppm  
MOLECULAR WEIGHT.....: 174  
MELT POINT/FREEZE POINT....: Approx. 55°F (13°C) for TDI  
BOILING POINT.....: Approx. 484°F (251°C) for TDI  
VAPOR PRESSURE.....: Approx. 0.025 mm Hg @ 77°F (25°C) for TDI  
VAPOR DENSITY (AIR=1).....: 6.0 for TDI  
pH.....: Not Applicable  
SPECIFIC GRAVITY.....: 1.22 @ 77°F (25°C)  
BULK DENSITY.....: 10.18 lbs/gal  
SOLUBILITY IN WATER.....: Not Soluble. Reacts slowly with water at normal  
room temperature to liberate CO<sub>2</sub> gas.  
% VOLATILE BY VOLUME.....: Negligible

Product Code: E-001

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4.02 page 13

#### IV. FIRE & EXPLOSION DATA

FLASH POINT  $^{\circ}\text{F}(^{\circ}\text{C})$ .....: 260 $^{\circ}\text{F}$  (127 $^{\circ}\text{C}$ ) Pensky Martens Closed Cup

##### FLAMMABLE LIMITS -

Le1.....: 0.9% for TDI

Uel.....: 9.5% for TDI

EXTINGUISHING MEDIA.....: Dry chemical (e.g. monoammonium phosphate, potassium sulfate, and potassium chloride), carbon dioxide, high expansion (proteinic) chemical foam, water spray for large fires. Caution: Reaction between water or foam and hot TDI can be vigorous.

##### SPECIAL FIRE FIGHTING PROCEDURES/UNUSUAL FIRE OR EXPLOSION HAZARDS:

Full emergency equipment with self-contained breathing apparatus and full protective clothing (such as rubber gloves, boots, bands around legs, arms and waist) should be worn by fire fighters. No skin surface should be exposed. During a fire, TDI vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. (See Section VIII). At temperatures greater than 350 $^{\circ}\text{F}$  (177 $^{\circ}\text{C}$ ) TDI forms carbodiimides with the release of  $\text{CO}_2$ , which can cause pressure build-up in closed containers. Explosive rupture is possible. Therefore, use cold water to cool fire-exposed containers.

#### V. HUMAN HEALTH DATA

##### PRIMARY ROUTE(S) OF

ENTRY.....: Inhalation. Skin contact from liquid, vapors or aerosols.

##### EFFECTS AND SYMPTOMS OF OVEREXPOSURE

###### INHALATION

Acute Exposure. TDI vapors or mist at concentrations above the TLV can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing obstruction). Persons with a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the TLV with similar symptoms as well as asthma attack. Exposure well above the TLV may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). These effects are usually reversible. Chemical or hypersensitive pneumonitis, with flu-like symptoms (e.g., fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure.

Chronic Exposure. As a result of previous repeated overexposures or a single large dose, certain individuals may develop isocyanate sensitization (chemical asthma) which will cause them to react to a later exposure to isocyanate at levels well below the TLV. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath or asthmatic attack, could be immediate or delayed up to several hours after exposure. Similar to many non-specific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Chronic overexposure to isocyanate has also been reported to cause lung damage (including decrease in lung function) which may be permanent. Sensitization can either be temporary or permanent.

Product Code: E-001

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## V. HUMAN HEALTH DATA - Continued

### SKIN CONTACT

Acute Exposure. Isocyanates react with skin protein and moisture and can cause irritation which may include the following symptoms: reddening, swelling, rash, scaling or blistering. Cured material is difficult to remove.

Chronic Exposure. Prolonged contact can cause reddening, swelling, rash, scaling, blistering, and, in some cases, skin sensitization. Individuals who have developed a skin sensitization can develop these symptoms as a result of contact with very small amounts of liquid material or as a result of exposure to vapor.

### EYE CONTACT

Acute Exposure. Liquid, aerosols or vapors are severely irritating and can cause pain, tearing, reddening and swelling. If left untreated, corneal damage can occur and injury is slow to heal. However, damage is usually reversible. See Section VI for treatment.

Chronic Exposure. Prolonged vapor contact may cause conjunctivitis.

### INGESTION

Acute Exposure. Can result in irritation and corrosive action in the mouth, stomach tissue and digestive tract. Symptoms can include sore throat, abdominal pain, nausea, vomiting and diarrhea.

Chronic Exposure. None found.

### MEDICAL CONDITIONS

AGGRAVATED BY EXPOSURE..: Asthma, other respiratory disorders (bronchitis, emphysema, bronchial hyperreactivity), skin allergies, eczema.

CARCINOGENICITY.....: No carcinogenic activity was observed in lifetime inhalation studies in rats and mice (International Isocyanate Institute).

NTP.....: The National Toxicology Program reported that TDI caused an increase in the number of tumors in exposed rats over those counted in non-exposed rats. The TDI was administered in corn-oil and introduced into the stomach through a tube. Based on this study, the NTP has listed TDI as a substance that may reasonably be anticipated to be a carcinogen in its Fourth Annual Report on Carcinogens.

IARC.....: IARC has announced that it will list TDI as a substance for which there is sufficient evidence for its carcinogenicity in experimental animals but inadequate evidence for the carcinogenicity of TDI to humans (IARC Monograph 39).

OSHA.....: Not listed.

### EXPOSURE LIMITS

OSHA PEL.....: 0.02 ppm Ceiling

ACGIH TLV.....: 0.005 ppm TWA/0.02 ppm STEL

## VI. EMERGENCY & FIRST AID PROCEDURES

**EYE CONTACT.....:** Flush with copious amounts of water, preferably lukewarm for at least 15 minutes holding eyelids open all the time. Refer individual to physician or an ophthalmologist for immediate follow-up.

**SKIN CONTACT.....:** Remove contaminated clothing immediately. Wash affected areas thoroughly with soap and water for at least 15 minutes. Tincture of green soap and water is also effective in removing isocyanates. Wash contaminated clothing thoroughly before reuse. For severe exposures, get under safety shower after removing clothing, then get medical attention. For lesser exposures, seek medical attention if irritation develops or persists after the area is washed.

**INHALATION.....:** Move to an area free from risk of further exposure. Administer oxygen or artificial respiration as needed. Obtain medical attention. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours. Consult physician.

**INGESTION.....:** Do not induce vomiting. Give 1 to 2 cups of milk or water to drink. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. Consult physician.

**NOTE TO PHYSICIAN.....:** Eyes. Stain for evidence of corneal injury. If cornea is burned, instill antibiotic steroid preparation frequently. Workplace vapors have produced reversible corneal epithelial edema impairing vision. Skin. This compound is a known skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burns. Ingestion. Treat symptomatically. There is no specific antidote. Inducing vomiting is contraindicated because of the irritating nature of this compound.

Respiratory. This compound is a known pulmonary sensitizer. Treatment is essentially symptomatic. An individual having a skin or pulmonary sensitization reaction to this material should be removed from exposure to any isocyanate.

## VII. EMPLOYEE PROTECTION RECOMMENDATIONS

**EYE PROTECTION.....:** Liquid chemical goggles or full-face shield. Contact lenses should not be worn. If vapor exposure is causing irritation, use a full-face, air-supplied respirator.

**SKIN PROTECTION.....:** Chemical resistant gloves (butyl rubber, nitrile rubber, polyvinyl alcohol). However, please note that PVA degrades in water. Cover as much of the exposed skin area as possible with appropriate clothing. If skin creams are used, keep the area covered only by the cream to a minimum.

**RESPIRATORY PROTECTION....:** An approved positive pressure air-supplied respirator is required whenever TDI concentrations are not known or exceed the Short-Term Exposure or Ceiling Limit of 0.02 ppm or exceed the 8-hour Time Weighted Average TLV of 0.005 ppm. An approved air-supplied respirator with full facepiece must also be worn during spray application, even if exhaust ventilation is used. For emergency and other conditions where the exposure limits may be greatly exceeded, use an approved, positive pressure self-contained breathing apparatus. TDI has poor warning properties since the odor at which TDI can be smelled is substantially higher than 0.02 ppm. Observe OSHA regulations for respirator use (29 CFR 1910.134).

## VII. EMPLOYEE PROTECTION RECOMMENDATIONS - Continued

**VENTILATION**.....: Local exhaust should be used to maintain levels below the TLV whenever TDI is handled, processed, or spray-applied. At normal room temperatures (70°F) TDI levels quickly exceed the TLV unless properly ventilated. Standard reference sources regarding industrial ventilation (e.g., ACGIH Industrial Ventilation) should be consulted for guidance about adequate ventilation.

**MONITORING**.....: TDI exposure levels must be monitored by accepted monitoring techniques to ensure that the TLV is not exceeded. (Contact Mobay for guidance). See Volume 1 (Chapter 17) and Volume 3 (Chapter 3) in Patty's Industrial Hygiene and Toxicology for sampling strategy.

**MEDICAL SURVEILLANCE**.....: Medical supervision of all employees who handle or come in contact with TDI is recommended. These should include preemployment and periodic medical examinations with respiratory function tests (FEV, FVC as a minimum). Persons with asthmatic-type conditions, chronic bronchitis, other chronic respiratory diseases or recurrent skin eczema or sensitization should be excluded from working with TDI. Once a person is diagnosed as sensitized to TDI, no further exposure can be permitted.

**OTHER**.....: Safety showers and eyewash stations should be available. Educate and train employees in safe use of product. Follow all label instructions.

## VIII. REACTIVITY DATA

**STABILITY**.....: Stable under normal conditions.

**POLYMERIZATION**.....: May occur if in contact with moisture or other materials which react with isocyanates. Self-reaction may occur at temperatures over 350°F (177°C) or at lower temperatures if sufficient time is involved. See Section IV.

### **INCOMPATIBILITY**

**(MATERIALS TO AVOID)**.....: Water, amines, strong bases, alcohols. Will cause some corrosion to copper alloys and aluminum. Reacts with water to form heat, CO<sub>2</sub> and insoluble ureas.

### **HAZARDOUS DECOMPOSITION**

**PRODUCTS**.....: By high heat and fire: carbon monoxide, oxides of nitrogen, traces of HCN, TDI vapors and mist.

## IX. SPILL OR LEAK PROCEDURES

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:** Evacuate and ventilate spill area; dike spill to prevent entry into water system; wear full protective equipment, including respiratory equipment during clean-up. (See Section VII).

**Major Spill:** Call Mobay at 412/923-1800. If transportation spill, call CHEMTREC 800/424-9300. If temporary control of isocyanate vapor is required, a blanket of protein foam (available at most fire departments) may be placed over the spill. Large quantities may be pumped into closed, but not sealed, container for disposal.

## IX. SPILL OR LEAK PROCEDURES - Continueud

**Minor Spill:** Absorb isocyanate with sawdust or other absorbent, shovel into suitable unsealed containers, transport to well-ventilated area (outside) and treat with neutralizing solution: mixture of water (80%) with non-ionic surfactant Tergitol TMN-10 (20%), or; water (90%), concentrated ammonia (3-8%) and detergent (2%). Add about 10 parts of neutralizer per part of isocyanate, with mixing. Allow to stand uncovered for 48 hours to let CO<sub>2</sub> escape.

**Clean-up:** Decontaminate floor with decontamination solution letting stand for at least 15 minutes.

**CERCLA (SUPERFUND) REPORTABLE QUANTITY:** 100 pounds for TDI

**WASTE DISPOSAL METHOD.....:** Follow all federal, state or local regulations. TDI must be disposed of in a permitted incinerator or landfill. Incineration is the preferred method for liquids. Solids are usually incinerated or landfilled. Empty containers must be handled with care due to product residue. Decontaminate containers prior to disposal. Empty decontaminated containers should be crushed to prevent reuse. DO NOT HEAT OR CUT EMPTY CONTAINER WITH ELECTRIC OR GAS TORCH. (See Sections IV and VIII). Vapors and gases may be highly toxic.

**RCRA STATUS.....:** TDI is listed as a hazardous waste (No. U-223) under Title 40 Code of Federal Regulations, Section 261.33 (f). The residue from decontaminating a TDI spill is also classified as a hazardous waste under Section 261.3 (c)(2) or RCRA.

**SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA), TITLE III:**

Section 302 - Extremely Hazardous Substances:

2,4-Toluene Diisocyanate (TDI) CAS# 584-84-9 = 65%

2,6-Toluene Diisocyanate (TDI) CAS# 91-08-7 = 35%

Section 313 - Toxic Chemicals:

2,4-Toluene Diisocyanate (TDI) CAS# 584-84-9 = 65%

2,6-Toluene Diisocyanate (TDI) CAS# 91-08-7 = 35%

## X. SPECIAL PRECAUTIONS & STORAGE DATA

### STORAGE TEMPERATURE

(MIN./MAX.).....: 70<sup>0</sup>F (21<sup>0</sup>C)/90<sup>0</sup>F (32<sup>0</sup>C)

AVERAGE SHELF LIFE.....: 12 months

### SPECIAL SENSITIVITY

(HEAT, LIGHT, MOISTURE): If container is exposed to high heat, 375<sup>0</sup>F (177<sup>0</sup>C) it can be pressurized and possibly rupture. TDI reacts slowly with water to form polyureas and liberates CO<sub>2</sub> gas. This gas can cause sealed containers to expand and possibly rupture.

### PRECAUTIONS TO BE TAKEN

**IN HANDLING AND STORING.:** Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected. Prevent all contact. Do not breathe the vapors. Warning properties (irritation of the eyes, nose and throat or odor) are not adequate to prevent chronic overexposure from inhalation. This material can produce asthmatic sensitization upon either single inhalation exposure to a relatively high concentration or upon repeated inhalation exposures to lower concentrations. Exposure to vapors of heated TDI can be extremely dangerous. Employee education and training in safe handling of this product are required under the OSHA Hazard Communication Standard.

Product Code: E-001

Page 6 of 8



## XI. SHIPPING DATA

D.O.T. SHIPPING NAME.....: Toluene Diisocyanate  
TECHNICAL SHIPPING NAME....: Toluene Diisocyanate  
D.O.T. HAZARD CLASS.....: Poison B  
UN/NA NO.....: UN 2078  
PRODUCT RQ.....: 100 lbs.  
D.O.T. LABELS.....: Poison  
D.O.T. PLACARDS.....: Poison  
FRT. CLASS BULK.....: Toluene Diisocyanate  
FRT. CLASS PKG.....: Chemicals, NOI (Toluene Diisocyanate) NMFC 60000  
PRODUCT LABEL.....: Mondur TD Product Label

## XII. ANIMAL TOXICITY DATA

### **ACUTE TOXICITY**

ORAL, LD50.....: Range of 4130-6170 mg/kg (Rats and Mice)  
DERMAL, LD50.....: Greater than 10,000 mg/kg (Rabbits)  
INHALATION, LC50.(4 hr): Range of 16-50 ppm (Rat), 10 ppm (Mouse),  
11 ppm (Rabbit), 13 ppm (Guinea Pig).  
EYE EFFECTS.....: Severe eye irritant capable of inducing corneal opacity.

SKIN EFFECTS.....: Moderate skin irritant. Primary dermal irritation score: 4.12/8.0 (Draize). However, repeated or prolonged contact may culminate in severe skin irritation and/or corrosion.

SENSITIZATION.....: Skin sensitizer in guinea pigs. One study using guinea pigs reported that repeated skin contact with TDI caused respiratory sensitization. Although poorly defined in experimental animal models, TDI is known to be a pulmonary sensitizer in humans. In addition, there is some evidence that cross-sensitization between different types of diisocyanates may occur.

SUB-CHRONIC/CHRONIC TOXICITY: Sub-chronic and chronic animal studies show that the primary effects of inhaling vapors and/or aerosols of TDI are restricted to the pulmonary systems. Emphysema, pulmonary edema, pneumonitis and rhinitis are common pathologic effects. Extended exposures to as low as 0.1 ppm TDI have induces pulmonary inflammation.

### **OTHER**

CARCINOGENICITY.....: The NTP conducted carcinogenesis studies of a commercial grade TDI using rats and mice in which the test material was diluted in corn oil and administered by gavage. The investigators concluded that TDI was carcinogenic in male and female rats (fibrosarcomas, pancreatic adenomas, neoplastic liver nodules and mammary gland fibrosarcomas) and female mice (hemangiosarcomas and hepatocellular adenomas). However, chronic inhalation studies in which rats and mice were exposed to 0.05 and 0.15 ppm TDI (10-30 times recommended TLV, 8-hr level) induced no treatment-related tumorigenic effects. In these studies, both exposure levels produced extensive irritation to the nasal passages and upper respiratory system of the test animals indicating that suitable effective exposures were administered.

MUTAGENICITY.....: TDI is positive in the Ames assay with activation. However, mammalian cell transformation assays using human lung cells and Syrian hamster kidney cells were negative, as were micronucleus tests using rats and mice.

Product Code: E-001

Page 7 of 8

## **XII. ANIMAL TOXICITY DATA - Continued**

**AQUATIC TOXICITY.....:** LC<sub>50</sub> - 96 hr (static): 165 mg/liter (Fathead minnow)  
LC<sub>50</sub> - 96 hr (static): Greater than 508 mg/liter (Grass shrimp)  
LC<sub>50</sub> - 24 hr (static): Greater than 500 mg/liter (Daphnia magna)

## **XIII. APPROVALS**

**REASON FOR ISSUE.....:** Adding SARA Title III; Revising Section XII  
**PREPARED BY.....:** G. L. Copeland  
**APPROVED BY.....:** D. R. Hackathorn  
**TITLE.....:** Manager, Product Safety

**Product Code: E-001**  
**Page 8 of 8**

4.02 page 20

4.03 Submit a copy or reasonable facsimile of any hazard information (other than an MSDS) that is provided to your customers/users regarding the listed substance or any formulation containing the listed substance. Indicate whether this information has been submitted by circling the appropriate response.

Yes ..... 1

No ..... (2)

4.04 For each activity that uses the listed substance, circle all the applicable number(s) corresponding to each physical state of the listed substance during the activity listed. Physical states for importing and processing activities are determined at the time you import or begin to process the listed substance. Physical states for manufacturing, storage, disposal and transport activities are determined using the final state of the product.

CBI

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Activity	Physical State				
	Solid	Slurry	Liquid	Liquified Gas	Gas
Manufacture	1	2	3	4	5
Import	1	2	3	4	5
Process	1	2	(3)	4	5
Store	(1)	2	(3)	4	5
Dispose	1	2	3	4	5
Transport	1	2	(3)	4	5

NOTE: Sent to Marine Shale Processors 16055 lbs. of material as waste TDI in solid and liquid form for incineration. Marine Shale was both transporter and disposer.

☐ Mark (X) this box if you attach a continuation sheet.

4.05 Particle Size -- If the listed substance exists in particulate form during any of the following activities, indicate for each applicable physical state the size and the percentage distribution of the listed substance by activity. Do not include particles  $\geq 10$  microns in diameter. Measure the physical state and particle sizes for importing and processing activities at the time you import or begin to process the listed substance. Measure the physical state and particle sizes for manufacturing storage, disposal and transport activities using the final state of the product.

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<u>Physical State</u>		<u>Manufacture</u>	<u>Import</u>	<u>Process</u>	<u>Store</u>	<u>Dispose</u>	<u>Transport</u>
Dust	<1 micron	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
	1 to <5 microns	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
	5 to <10 microns	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
Powder	<1 micron	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
	1 to <5 microns	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
	5 to <10 microns	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
Fiber	<1 micron	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
	1 to <5 microns	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
	5 to <10 microns	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
Aerosol	<1 micron	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
	1 to <5 microns	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
	5 to <10 microns	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>

☐ Mark (X) this box if you attach a continuation sheet.

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SECTION 5 ENVIRONMENTAL FATE

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PART A RATE CONSTANTS AND TRANSFORMATION PRODUCTS

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5.01 Indicate the rate constants for the following transformation processes.

a. Photolysis:

Absorption spectrum coefficient (peak) .... UK (1/M cm) at UK nm  
Reaction quantum yield,  $\phi$  ..... UK at UK nm  
Direct photolysis rate constant,  $k_p$ , at ... UK 1/hr UK latitude

b. Oxidation constants at 25°C:

For  $^1O_2$  (singlet oxygen),  $k_{ox}$  ..... UK 1/M hr  
For  $RO_2$  (peroxy radical),  $k_{ox}$  ..... UK 1/M hr

c. Five-day biochemical oxygen demand,  $BOD_5$  ... UK mg/l

d. Biotransformation rate constant:

For bacterial transformation in water,  $k_b$  ... UK 1/hr  
Specify culture ..... UK

e. Hydrolysis rate constants:

For base-promoted process,  $k_B$  ..... UK 1/M hr  
For acid-promoted process,  $k_A$  ..... UK 1/M hr  
For neutral process,  $k_N$  ..... UK 1/hr

f. Chemical reduction rate (specify conditions) UK

g. Other (such as spontaneous degradation) ... UK

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☐ Mark (X) this box if you attach a continuation sheet.

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PART B PARTITION COEFFICIENTS

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5.02 a. Specify the half-life of the listed substance in the following media.

<u>Media</u>	<u>Half-life (specify units)</u>
Groundwater	<u>UK</u>
Atmosphere	<u>UK</u>
Surface water	<u>UK</u>
Soil	<u>UK</u>

b. Identify the listed substance's known transformation products that have a half-life greater than 24 hours.

<u>CAS No.</u>	<u>Name</u>	<u>Half-life (specify units)</u>	<u>Media</u>
<u>UK</u>	<u>UK</u>	<u>UK</u>	in <u>UK</u>
<u>                    </u>	<u>                    </u>	<u>                    </u>	in <u>                    </u>
<u>                    </u>	<u>                    </u>	<u>                    </u>	in <u>                    </u>
<u>                    </u>	<u>                    </u>	<u>                    </u>	in <u>                    </u>

---

5.03 Specify the octanol-water partition coefficient,  $K_{ow}$  ... UK at 25°C  
 Method of calculation or determination ..... UK

---

5.04 Specify the soil-water partition coefficient,  $K_d$  ..... UK at 25°C  
 Soil type ..... UK

---

5.05 Specify the organic carbon-water partition coefficient,  $K_{oc}$  ..... UK at 25°C

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5.06 Specify the Henry's Law Constant,  $H$  ..... UK atm-m<sup>3</sup>/mole

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☐ Mark (X) this box if you attach a continuation sheet.

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5.07 List the bioconcentration factor (BCF) of the listed substance, the species for which it was determined, and the type of test used in deriving the BCF.

<u>Bioconcentration Factor</u>	<u>Species</u>	<u>Test</u> <sup>1</sup>
UK	UK	UK

<sup>1</sup>Use the following codes to designate the type of test:

F = Flowthrough  
S = Static

☐ Mark (X) this box if you attach a continuation sheet.

6.04 For each market listed below, state the quantity sold and the total sales value of the listed substance sold or transferred in bulk during the reporting year.

☐

<u>Market</u>	<u>Quantity Sold or Transferred (kg/yr)</u>	<u>Total Sales Value (\$/yr)</u>
Retail sales	_____	_____
Distribution -- Wholesalers	_____	_____
Distribution -- Retailers	_____	_____
Intra-company transfer	_____	_____
Repackagers	_____	_____
Mixture producers	_____	_____
Article producers	_____	_____
Other chemical manufacturers or processors	_____	_____
Exporters	_____	_____
Other (specify)	_____	_____
_____	_____	_____

6.05 Substitutes -- List all known commercially feasible substitutes that you know exist for the listed substance and state the cost of each substitute. A commercially feasible substitute is one which is economically and technologically feasible to use in your current operation, and which results in a final product with comparable performance in its end uses.

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<u>Substitute</u>	<u>Cost (\$/kg)</u>
UK	UK
_____	_____
_____	_____
_____	_____

☐ Mark (X) this box if you attach a continuation sheet.



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SECTION 7 MANUFACTURING AND PROCESSING INFORMATION

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General Instructions:

For questions 7.04-7.06, provide a separate response for each process block flow diagram provided in questions 7.01, 7.02, and 7.03. Identify the process type from which the information is extracted.

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PART A MANUFACTURING AND PROCESSING PROCESS TYPE DESCRIPTION

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7.01 In accordance with the instructions, provide a process block flow diagram showing the major (greatest volume) process type involving the listed substance.

CBI

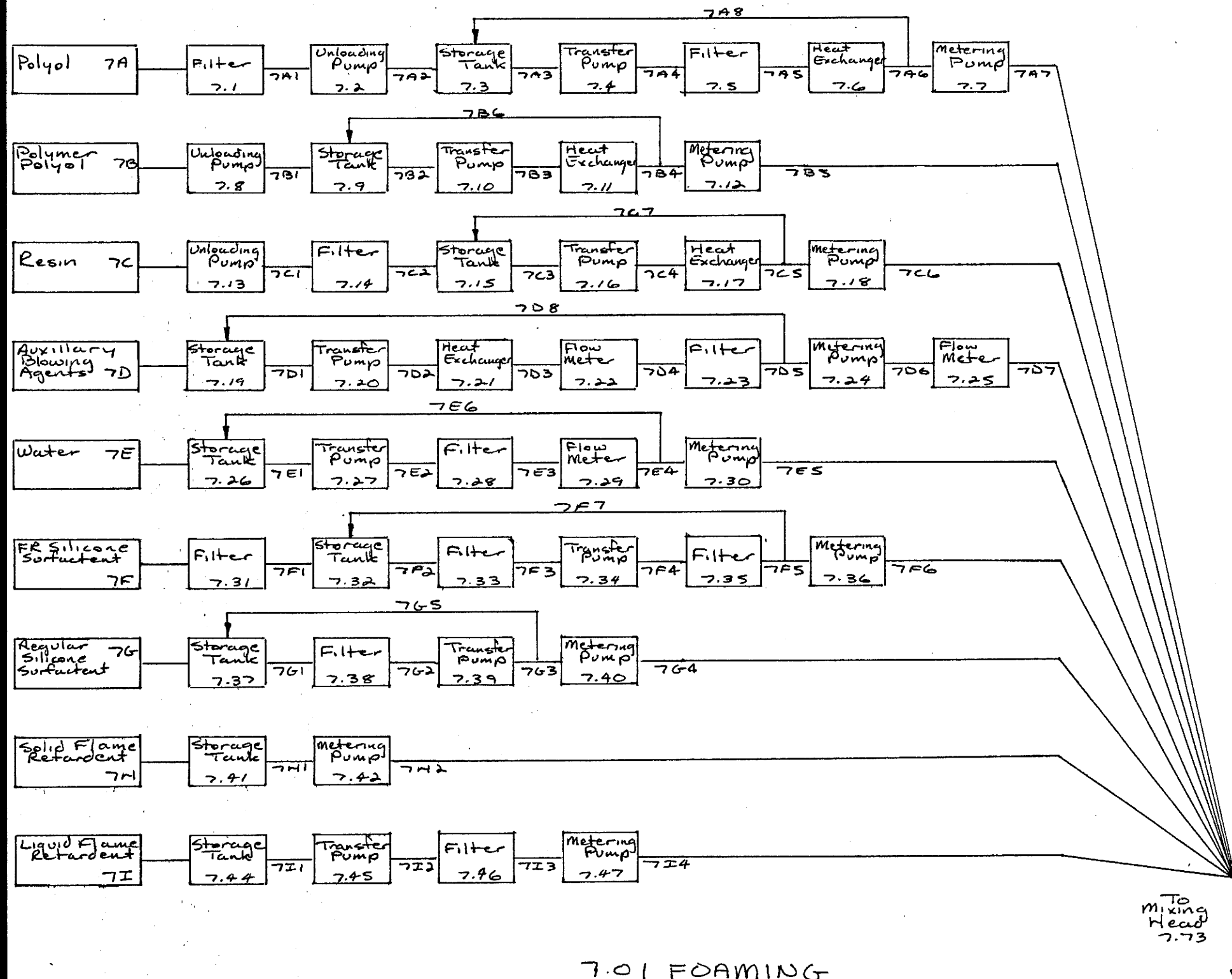
☐ Process type ..... 

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☒ Mark (X) this box if you attach a continuation sheet.

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Ester Silicone  
Surfactant 7J  
Tin  
Catalyst 7K  
Ether Amine  
Catalyst 7L  
Anti-  
Oxidant 7M  
Pigments 7N  
Cell  
Opener 7P

Storage  
Tank  
7.48

Filter  
7.49

Metering  
Pump  
7.50

7A7 7F6  
7B5 7G4  
7C6 7H2  
7D7 7I1  
7E5

Mixing  
Head  
7.73

7U1

7FL

Ester Amine  
Catalyst  
7Q

Filter  
7.51

Storage  
Tank  
7.52

Filter  
7.53

Flow  
Meter  
7.54

Metering  
Pump  
7.55

Mixing Head  
Flush  
7R

Storage  
Tank  
7.56

Metering  
Pump  
7.57

Vent  
7.58

Desiccant  
Dryer  
7.59

7S10

TDI 80/20  
7S

Unloading  
Pump  
7.60

Filter  
7.61

Storage  
Tanks  
7.62

Filter  
7.63

Transfer  
Pump  
7.64

Heat  
Exchanger  
7.65

Flow  
Meter  
7.66

Metering  
Pump  
7.77

Flow  
Meter  
7.78

TDI 65/35  
7T

Ventilation  
System  
7.69

Ventilation  
System  
7.70

Ventilation  
System  
7.71

Roof Fans  
7.72

Internal  
Scrap  
Foam  
7.80

7U1

Trough  
Fall Plate  
7.74

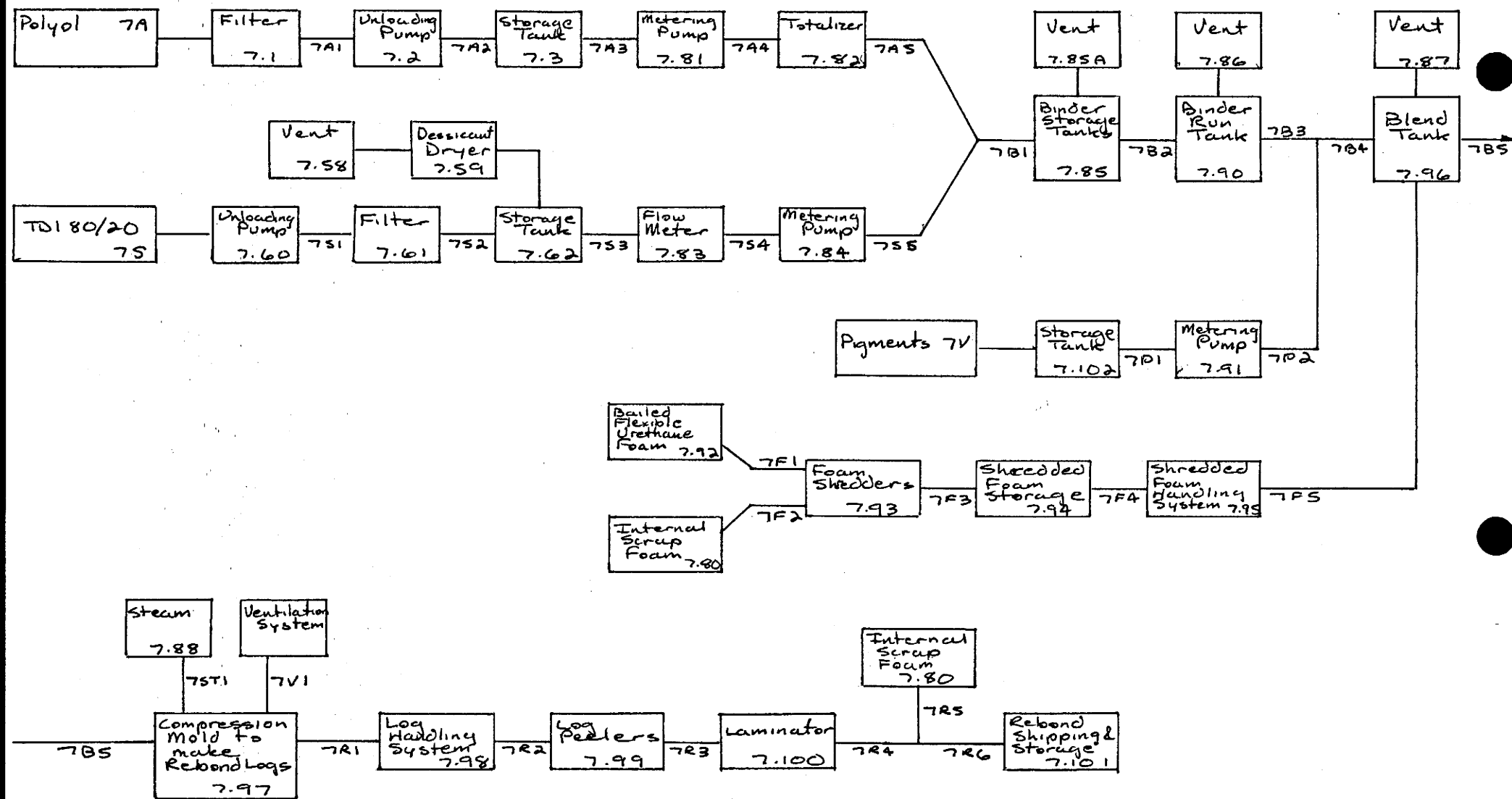
Conveyor  
System  
7.75

Cut-Off  
Saw  
7.76

Foam Curing  
& Storage  
Area  
7.77

Foam  
Fabricating  
7.78

Shipping &  
Storage  
7.79



---

7.03 In accordance with the instructions, provide a process block flow diagram showing all process emission streams and emission points that contain the listed substance and which, if combined, would total at least 90 percent of all facility emissions if not treated before emission into the environment. If all such emissions are released from one process type, provide a process block flow diagram using the instructions for question 7.01. If all such emissions are released from more than one process type, provide a process block flow diagram showing each process type as a separate block.

CBI

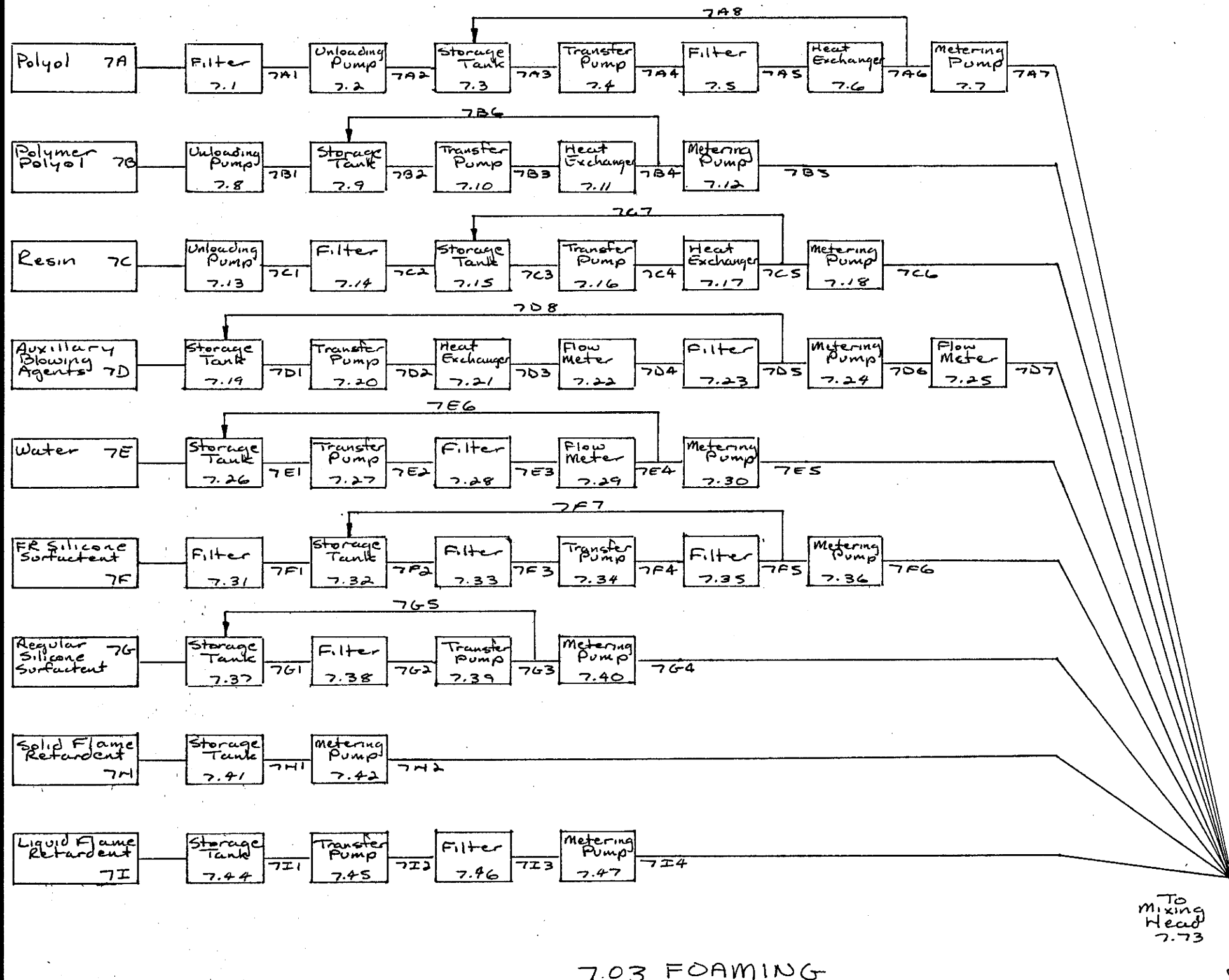
☐ Process type ..... 

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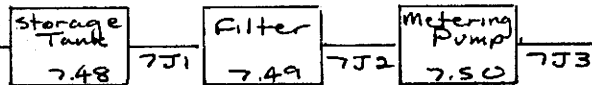
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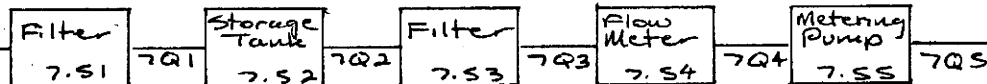
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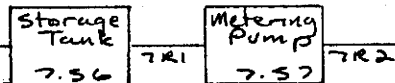
EsterSilicone  
Surfactant 7J  
Tin  
Catalyst 7K  
EtherAmine  
Catalyst 7L  
Anti-  
Oxidant 7M  
Pigments 7N  
Cell  
Opener 7P



EsterAmine  
Catalyst 7Q



Mixing Head  
Flush 7R



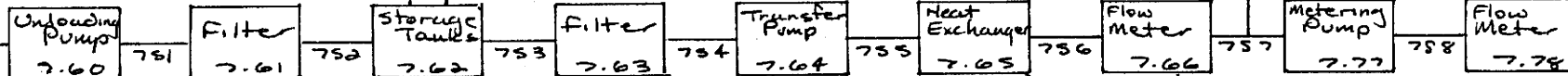
7A7 7F6  
7B5 7G4  
7C6 7H3  
7D7 7I1  
7ES

Mixing  
Head  
7.73

7FL

Vent  
7.58  
Desiccant  
Dryer  
7.59

TDI 80/20  
7S



TDI 65/35  
7T

Ventilation  
System  
7.69

Ventilation  
System  
7.70

Ventilation  
System  
7.71

Roof Fans  
7.72

Internal  
Scrap  
Foam  
7.80

Trough  
Fall Plate  
7.74

Conveyor  
System  
7.75

Cut-Off  
Saw  
7.76

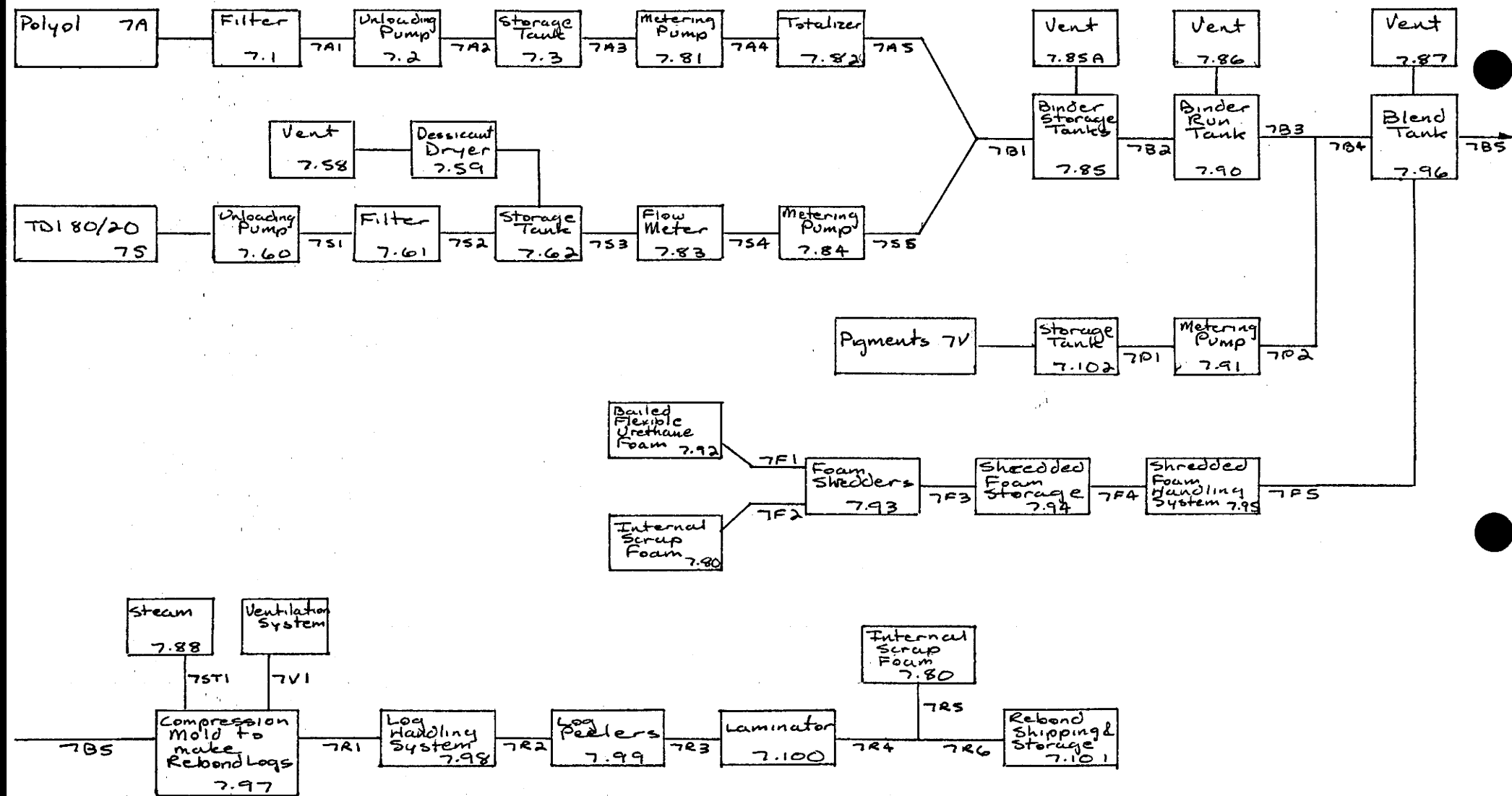
Foam Curing  
& Storage  
Area  
7.77

Foam  
Fabricating  
7.78

Shipping &  
Storage  
7.79

### TDI Emissions

- 7.58 TDI Storage Tank Vent
- 7.60, 7.64, 7.67 TDI Pump Seals
- 7.61, 7.63 TDI Filters
- 7.69, 7.70 Foamline Ventilation
- 7.71 Cut-off Saw Ventilation



TDI EMISSIONS  
 7.58 TDI Storage Tank Vent  
 7.60, 7.64 TDI Pump Seals  
 7.61 TDI Filters  
 7.85 Binder Storage Tank Vent  
 7.86 Binder Run Tank Vent  
 7.87 Blend Tank Vent

7.03 REBOND



7.04 Describe the typical equipment types for each unit operation identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... FOAMING

<u>Unit Operation ID Number</u>	<u>Typical Equipment Type</u>	<u>Operating Temperature Range (°C)</u>	<u>Operating Pressure Range (mm Hg)</u>	<u>Vessel Composition</u>
<u>7.1</u>	<u>Bay Filter</u>	<u>Ambient</u>	<u>1000</u>	<u>Steel</u>
<u>7.2</u>	<u>Gear Unloading Pump</u>	<u>Ambient</u>	<u>2600</u>	<u>Steel</u>
<u>7.3</u>	<u>Storage Tank</u>	<u>27</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.4</u>	<u>Gear Transfer Pump</u>	<u>27</u>	<u>1550-6200</u>	<u>Steel</u>
<u>7.5</u>	<u>Cartridge Filter</u>	<u>27</u>	<u>5200-6200</u>	<u>Steel</u>
<u>7.6</u>	<u>Plate Heat Exchanger</u>	<u>18</u>	<u>4200</u>	<u>Steel</u>
<u>7.7</u>	<u>Gear Metering Pump</u>	<u>18</u>	<u>2100-3100</u>	<u>Steel</u>
<u>7.8</u>	<u>Unloading Pump</u>	<u>Ambient</u>	<u>1550</u>	<u>Steel</u>
<u>7.9</u>	<u>Storage Trunk Gear</u>	<u>27</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.10</u>	<u>Transfer Pump</u>	<u>27</u>	<u>1550-10500</u>	<u>Steel</u>

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7.04 Describe the typical equipment types for each unit operation identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

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☐ Process type ..... FOAMING

<u>Unit Operation ID Number</u>	<u>Typical Equipment Type</u>	<u>Operating Temperature Range (°C)</u>	<u>Operating Pressure Range (mm Hg)</u>	<u>Vessel Composition</u>
<u>7.11</u>	<u>Shell &amp; Tube Exchange</u>	<u>24</u>	<u>6200-7800</u>	<u>Steel</u>
<u>7.12</u>	<u>Gear Metering Pump</u>	<u>24</u>	<u>6200-15500</u>	<u>Steel</u>
<u>7.13</u>	<u>Gear Unloading Pump</u>	<u>Ambient</u>	<u>1550</u>	<u>Steel</u>
<u>7.14</u>	<u>Basket Filter</u>	<u>Ambient</u>	<u>1550-3100</u>	<u>Steel</u>
<u>7.15</u>	<u>Storage Tank</u>	<u>35</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.16</u>	<u>Gear Transfer Pump</u>	<u>35</u>	<u>1000-6700</u>	<u>Steel</u>
<u>7.17</u>	<u>plate Heat Exchanger</u>	<u>18</u>	<u>3100-5200</u>	<u>Steel</u>
<u>7.18</u>	<u>Gear Metering Pump</u>	<u>18</u>	<u>2100-13500</u>	<u>Steel</u>
<u>7.19</u>	<u>Storage Tank</u>	<u>7-16</u>	<u>500</u>	<u>Steel</u>
<u>7.20</u>	<u>Vane Transfer Pump</u>	<u>7-16</u>	<u>250-2100</u>	<u>Steel</u>

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7.04 Describe the typical equipment types for each unit operation identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

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☐ Process type ..... FOAMING

<u>Unit Operation ID Number</u>	<u>Typical Equipment Type</u>	<u>Operating Temperature Range (°C)</u>	<u>Operating Pressure Range (mm Hg)</u>	<u>Vessel Composition</u>
7.21	Shell & Tube Heat Exchanger	7-16	1550-2100	Steel
7.22	Rotameter Flowmeter	7-16	1300	Glass
7.23	Bag Filter	7-16	1000	Steel
7.24	Vane Metering Pump	7-16	500-2100	Steel
7.25	Turbometer Flowmeter	7-16	150-500	Steel
7.26	Storage Tank	21	Atmospheric	Fiberglass
7.27	Gear Transfer Pump	21	750-155	Steel
7.28	Bag Filter	21	1000	Steel

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7.04 Describe the typical equipment types for each unit operation identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

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☐ Process type ..... \_\_\_\_\_

Unit Operation ID Number	Typical Equipment Type	Operating Temperature Range (°C)	Operating Pressure Range (mm Hg)	Vessel Composition
7.29	Rotameter Flowmeter	21	1000	Glass
7.30	Piston Metering Pump	21	1000-10500	Steel
7.31	Bag Filter	27	1550	Steel
7.32	Storage Tank	27	Atmospheric	Steel
7.33	Bag Filter	27	2106-2300	Steel
7.34	Gear Transfer Pump	27	2100-3900	Steel
7.35	Bag Filter	27	1300-2100	Steel
7.36	Gear Metering Pump	27	750-3900	Steel
7.37	Storage Tank	27	Atmospheric	Steel
7.38	Bag Filter	27	2600	Steel

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7.04 Describe the typical equipment types for each unit operation identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

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☐ Process type :..... FOAMING

<u>Unit Operation ID Number</u>	<u>Typical Equipment Type</u>	<u>Operating Temperature Range (°C)</u>	<u>Operating Pressure Range (mm Hg)</u>	<u>Vessel Composition</u>
<u>7.39</u>	<u>Gear Transfer Pump</u>	<u>27</u>	<u>2600-3600</u>	<u>Steel</u>
<u>7.40</u>	<u>Gear Metering Pump</u>	<u>27</u>	<u>750-2120</u>	<u>Steel</u>
<u>7.41</u>	<u>Storage Tank</u>	<u>21</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.42</u>	<u>Worm Gear Metering Pump</u>	<u>21</u>	<u>1550-15174</u>	<u>Steel</u>
<u>7.44</u>	<u>Storage Tank</u>	<u>21-27</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.45</u>	<u>Gear Transfer Pump</u>	<u>21-27</u>	<u>2620-4700</u>	<u>Steel</u>
<u>7.46</u>	<u>Bay Filter</u>	<u>21-27</u>	<u>750-2600</u>	<u>Steel</u>
<u>7.47</u>	<u>Gear Metering Pump</u>	<u>21-27</u>	<u>1550-2100</u>	<u>Steel</u>
<u>7.48</u>	<u>Storage Tank</u>	<u>24</u>	<u>1550-2100</u>	<u>Steel</u>
<u>7.49</u>	<u>Bag Filter</u>	<u>24</u>	<u>1550</u>	<u>Steel</u>

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7.04 Describe the typical equipment types for each unit operation identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

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☐ Process type ..... FOAMING

Unit Operation ID Number	Typical Equipment Type	Operating Temperature Range (°C)	Operating Pressure Range (mm Hg)	Vessel Composition
<u>7.50</u>	<u>Gear or Variable Displacement Metering Pump</u>	<u>24</u>	<u>1000-14200</u>	<u>Steel</u>
<u>7.51</u>	<u>Bag Filter</u>	<u>24</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.52</u>	<u>Storage Tank</u>	<u>24</u>	<u>1550-2100</u>	<u>Steel</u>
<u>7.53</u>	<u>Bag Filter</u>	<u>24</u>	<u>1550-1800</u>	<u>Steel</u>
<u>7.54</u>	<u>Rotameter Flowmeter</u>	<u>24</u>	<u>1550-1800</u>	<u>Steel</u>
<u>7.55</u>	<u>Variable Displacement Metering Pump</u>	<u>24</u>	<u>750-2100</u>	<u>Steel</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

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7.04 Describe the typical equipment types for each unit operation identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

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☐ Process type ..... FOAMING

<u>Unit Operation ID Number</u>	<u>Typical Equipment Type</u>	<u>Operating Temperature Range (°C)</u>	<u>Operating Pressure Range (mm Hg)</u>	<u>Vessel Composition</u>
<u>7.56</u>	<u>Storage Tank</u>	<u>21</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.57</u>	<u>Gear Metering Pump</u>	<u>21</u>	<u>2100-6200</u>	<u>Steel</u>
<u>7.58</u>	<u>Tank Vent</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.59</u>	<u>Dessicant Dryer</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.60</u>	<u>Gear Unloading Pump</u>	<u>Ambient</u>	<u>1550</u>	<u>Steel</u>
<u>7.61</u>	<u>Bag Filter</u>	<u>Ambient</u>	<u>1550</u>	<u>Steel</u>
<u>7.62</u>	<u>Storage Tank</u>	<u>27</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.63</u>	<u>Bag Filter</u>	<u>27</u>	<u>1000-4200</u>	<u>Steel</u>
<u>7.64</u>	<u>Gear Transfer Pump</u>	<u>27</u>	<u>1000-5200</u>	<u>Steel</u>
<u>7.65</u>	<u>Plate Heat Exchanger</u>	<u>20</u>	<u>2600-4700</u>	<u>Steel</u>

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7.04 Describe the typical equipment types for each unit operation identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

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☐ Process type ..... FOAMING

<u>Unit Operation ID Number</u>	<u>Typical Equipment Type</u>	<u>Operating Temperature Range (°C)</u>	<u>Operating Pressure Range (mm Hg)</u>	<u>Vessel Composition</u>
<u>7.66</u>	<u>Rotameter Flowmeter</u>	<u>20</u>	<u>2600</u>	<u>Glass</u>
<u>7.67</u>	<u>Gear Metering Pump</u>	<u>20</u>	<u>2100-4700</u>	<u>Steel</u>
<u>7.68</u>	<u>Turbometer Flowmeter</u>	<u>20</u>	<u>31200-47000</u>	<u>Steel</u>
<u>7.69</u>	<u>Foamline Ventilation</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.70</u>	<u>Foamline Ventilation</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.71</u>	<u>Cut off Saw Ventilation</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.72</u>	<u>Roof Fans in Curing Storage Area</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.73</u>	<u>Mixing Head</u>	<u>20</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.74</u>	<u>Trough &amp; Fall Plate</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.75</u>	<u>Conveyor System</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>

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☐ Process type ..... FOAMING

<u>Unit Operation ID Number</u>	<u>Typical Equipment Type</u>	<u>Operating Temperature Range (°C)</u>	<u>Operating Pressure Range (mm Hg)</u>	<u>Vessel Composition</u>
<u>7.76</u>	<u>Traveling Cut Off Saw</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.77</u>	<u>Block Curing Storage Area</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.78</u>	<u>Foam cutting, Peeling, Laminating Equipment</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.79</u>	<u>Forklifts &amp; Trucks</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.80</u>	<u>Hand Pull Carts</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>
<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>
<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>
<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>
<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>

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7.04 Describe the typical equipment types for each unit operation identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

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☐ Process type ..... REBOND

Unit Operation ID Number	Typical Equipment Type	Operating Temperature Range (°C)	Operating Pressure Range (mm Hg)	Vessel Composition
7.1	Bag Filter	Ambient	1000	Steel
7.2	Gear Unloading Pump	Ambient	2600	Steel
7.3	Storage Tank	27	2100-3100	Steel
7.81	Gear Metering Pump	27	2600	Steel
7.82	Totalizer Flowmeter	27	2600	Steel
7.58	Tank Vent	Ambient	Atmospheric	Steel
7.59	Dessicant Dryer	Ambient	Atmospheric	Steel
7.60	Gear Unloading Pump	Ambient	1550	Steel
7.61	Bag Filter	Ambient	1550	Steel
7.62	Storage Tank	27	Atmospheric	Steel

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☐ Process type ..... REBOND

<u>Unit Operation ID Number</u>	<u>Typical Equipment Type</u>	<u>Operating Temperature Range (°C)</u>	<u>Operating Pressure Range (mm Hg)</u>	<u>Vessel Composition</u>
<u>7.83</u>	<u>Rotameter Flowmeter</u>	<u>27</u>	<u>2600</u>	<u>Glass</u>
<u>7.84</u>	<u>Gear Metering Pump</u>	<u>27</u>	<u>2100-4700</u>	<u>Steel</u>
<u>7.85A</u>	<u>Binder Tank Vents</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.85</u>	<u>Binder Storage Tanks</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.86</u>	<u>Binder Run Tank Vents</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.87</u>	<u>Blend Tank Vent</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.88</u>	<u>Steam Line</u>	<u>115</u>	<u>5200</u>	<u>Steel</u>
<u>7.89</u>	<u>Ventilation System</u>	<u>115</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.90</u>	<u>Binder Run Tank</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.102</u>	<u>Storage Tank</u>	<u>30</u>	<u>1550</u>	<u>Steel</u>

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7.04 Describe the typical equipment types for each unit operation identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

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☐ Process type ..... REBOND

<u>Unit Operation ID Number</u>	<u>Typical Equipment Type</u>	<u>Operating Temperature Range (°C)</u>	<u>Operating Pressure Range (mm Hg)</u>	<u>Vessel Composition</u>
<u>7.91</u>	<u>Metering Pumps</u>	<u>30</u>	<u>1000-2100</u>	<u>Steel</u>
<u>7.80</u>	<u>Hand Pull Carts</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.92</u>	<u>Bail Strap Cutter</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.93</u>	<u>Foam Granulators</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.94</u>	<u>Shredded Foam Storage</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.95</u>	<u>Shredded Foam Handling system</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.96</u>	<u>Blend Tank</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.97</u>	<u>Rebond Molding System</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.98</u>	<u>Log Handling System</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.99</u>	<u>Log Peelers</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>

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7.04 Describe the typical equipment types for each unit operation identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

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☐ Process type ..... REBOND

<u>Unit Operation ID Number</u>	<u>Typical Equipment Type</u>	<u>Operating Temperature Range (°C)</u>	<u>Operating Pressure Range (mm Hg)</u>	<u>Vessel Composition</u>
<u>7.100</u>	<u>Hot Film Laminator</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.80</u>	<u>Hand Pull Carts</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.101</u>	<u>Forklifts &amp; Trucks</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
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7.05 Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

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☐ Process type ..... FOAMING

Process Stream ID Code	Process Stream Description	Physical State <sup>1</sup>	Stream Flow (kg/yr)
7A,7A1-7A8	Regular Polyol	OL	5,017,241
7B,7B1-7B6	Polymer Polyol	OL	337,485
7C,7C1-7C7	Ester Resin	OL	338,001
7D,7D1-7D8	Auxillary Blowing Agents	GU	103,901
7E,7E1-7E6	Water	OL	210,820
7F,7F1-7F7	Fr Silicone Surfactent	OL	50,839
7G,7G1-8G5	Regular Silicone Surfactant	OL	19,699
7H,7H1,7H2	Solid Flame Retardent	OL	33,109

<sup>1</sup>Use the following codes to designate the physical state for each process stream:

GC = Gas (condensable at ambient temperature and pressure)  
 GU = Gas (uncondensable at ambient temperature and pressure)  
 SO = Solid  
 SY = Sludge or slurry  
 AL = Aqueous liquid  
 OL = Organic liquid  
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

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7.05 Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

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☐ Process type ..... FOAMING

<u>Process Stream ID Code</u>	<u>Process Stream Description</u>	<u>Physical State<sup>1</sup></u>	<u>Stream Flow (kg/yr)</u>
<u>7I,7I1-7I4</u>	<u>Liquid Flame Retardent</u>	<u>OL</u>	<u>368,406</u>
<u>7J,7J1,7J2</u>	<u>Ester Silicone Suractent</u>	<u>OL</u>	<u>4,955</u>
<u>7K,7J1-7J3</u>	<u>Tin Catalysts</u>	<u>OL</u>	<u>21,937</u>
<u>7L,7J1-7J3</u>	<u>Ether Amine Catalysts</u>	<u>OL</u>	<u>16,419</u>
<u>7M,7J1-7J3</u>	<u>Anti-Oxidents</u>	<u>OL</u>	<u>18,120</u>
<u>7N,7J1-7J3</u>	<u>Pigments</u>	<u>OL</u>	<u>29,086</u>
<u>7P,7J1-7J3</u>	<u>Ester Cell- Opener</u>	<u>OL</u>	<u>393</u>
<u>7Q,7Q1-7Q5</u>	<u>Ester Amine Catalysts</u>	<u>OL</u>	<u>4,426</u>

<sup>1</sup>Use the following codes to designate the physical state for each process stream:

GC = Gas (condensable at ambient temperature and pressure)  
 GU = Gas (uncondensable at ambient temperature and pressure)  
 SO = Solid  
 SY = Sludge or slurry  
 AL = Aqueous liquid  
 OL = Organic liquid  
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

☐ Mark (X) this box if you attach a continuation sheet.

7.05 Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... FOAMING

Process Stream ID Code	Process Stream Description	Physical State <sup>1</sup>	Stream Flow (kg/yr)
7R,7R1,7R2	Mixing Head Flush	OL	21,770
7S,7S1-7S10	TDI 80/20	OL	2,627,178
7T,7S3-7S10	TDI 65/35	OL	63,078
7FL	Mixing Head Flush	OL	21,770
7V1-7V3	Stack Emissions	GU	309,708
7V4	Curing Area Fugitive Emissions	GU	309,573
7U1-7U6	Slabstock Polyurethane Flexible Foam	SO	8,645,814
7U7	Internally Generated Scrap, Polyurethane Flexible Foam	SO	5,310,529

<sup>1</sup>Use the following codes to designate the physical state for each process stream:

GC = Gas (condensable at ambient temperature and pressure)  
 GU = Gas (uncondensable at ambient temperature and pressure)  
 SO = Solid  
 SY = Sludge or slurry  
 AL = Aqueous liquid  
 OL = Organic liquid  
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

NOTE: ENGINEERING ASSUMPTION OF 50% SPLIT IN  
 CARBON DIOXIDE AND AUXILLARY BLOWING  
 AGENTS EMISSIONS BETWEEN STACKS AND  
 CURING AREA

☐ Mark (X) this box if you attach a continuation sheet.



7.05 Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... FOAMING

Process Stream ID Code	Process Stream Description	Physical State <sup>1</sup>	Stream Flow (kg/yr)
7U8	Net Polyurethane Flexible Foam	SO	3,335,285

<sup>1</sup>Use the following codes to designate the physical state for each process stream:

GC = Gas (condensable at ambient temperature and pressure)  
 GU = Gas (uncondensable at ambient temperature and pressure)  
 SO = Solid  
 SY = Sludge or slurry  
 AL = Aqueous liquid  
 OL = Organic liquid  
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

☐ Mark (X) this box if you attach a continuation sheet.

7.05 Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... REBOND

Process Stream ID Code	Process Stream Description	Physical State <sup>1</sup>	Stream Flow (kg/yr)
7A,7A1-7A5	Regular Polyol	OL	597,347
7S,7S1-7S5	TDI 80/20	OL	181.196
7B1-7B3	Binder	OL	778.543
7P1,7P2	Pigments	OL	33,635
7B4	Binder & Pigment	OL	812,177
7F1	Bailed Flexible Urethane Foam	SO	2,274,993
7F2	Internal Scrap Foam	SO	8,065,889
7F3-7F5	Shredded Foam	SO	10,340,882

<sup>1</sup>Use the following codes to designate the physical state for each process stream:

GC = Gas (condensable at ambient temperature and pressure)  
 GU = Gas (uncondensable at ambient temperature and pressure)  
 SO = Solid  
 SY = Sludge or slurry  
 AL = Aqueous liquid  
 OL = Organic liquid  
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

☒ Mark (X) this box if you attach a continuation sheet.

7.05 Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... REBOND

<u>Process Stream ID Code</u>	<u>Process Stream Description</u>	<u>Physical State<sup>1</sup></u>	<u>Stream Flow (kg/yr)</u>
<u>7B5</u>	<u>Shredded Foam, Binder, Pigment Mix</u>	<u>SO</u>	<u>11,153,059</u>
<u>7ST1</u>	<u>Steam</u>	<u>GU</u>	<u>341,223</u>
<u>7V1</u>	<u>Steam</u>	<u>GU</u>	<u>324,162</u>
<u>7R1-7R4</u>	<u>Rebonded Foam</u>	<u>SO</u>	<u>11,170,121</u>
<u>7R5</u>	<u>Internally Generated Scrap Rebonded Foam</u>	<u>SO</u>	<u>2,755,360</u>
<u>7R6</u>	<u>Net Rebonded Foam</u>	<u>SO</u>	<u>8,414,760</u>
<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>
<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>

<sup>1</sup>Use the following codes to designate the physical state for each process stream:

GC = Gas (condensable at ambient temperature and pressure)  
 GU = Gas (uncondensable at ambient temperature and pressure)  
 SO = Solid  
 SY = Sludge or slurry  
 AL = Aqueous liquid  
 OL = Organic liquid  
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

☐ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s).  
If a process block flow diagram is provided for more than one process type, photocopy  
this question and complete it separately for each process type. (Refer to the  
CBI instructions for further explanation and an example.)

☐ Process type ..... FOAMING

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds <sup>1</sup>	Concen- trations <sup>2,3</sup> (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
7A,7A1-7A8	Regular Polyol	100% EW	N/A	N/A
7B,7B1-7B6	Polymer Polyol	100% EW	N/A	N/A
7C,7C1-7C7	Ester Resin	100% EW	N/A	N/A

7.06 continued below

☒ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type ..... FOAMING

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds <sup>1</sup>	Concentrations <sup>2,3</sup> (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
<u>7D,7D1-7D8</u>	<u>Auxillary Blowing Agent</u>	<u>100% EW</u>	<u>N/A</u>	<u>N/A</u>
<u>7E,7E1-7EG</u>	<u>Water</u>	<u>100% EW</u>	<u>N/A</u>	<u>N/A</u>
<u>7F,7F1-7F7</u>	<u>FR Silicone Surfactant</u>	<u>100% EW</u>	<u>N/A</u>	<u>N/A</u>

7.06 continued below

☐ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type ..... FOAMING

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds <sup>1</sup>	Concentrations <sup>2,3</sup> (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
<u>7G,7G1-7G5</u>	<u>Regular Silicone Surfactant</u>	<u>100% EW</u>	<u>N/A</u>	<u>N/A</u>
<u>7H,7H1-7H3</u>	<u>Solid Flame Retardant</u>	<u>100% EW</u>	<u>N/A</u>	<u>N/A</u>
<u>7I,7I1-7I5</u>	<u>Liquid Flame Retardant</u>	<u>100% EW</u>	<u>N/A</u>	<u>N/A</u>

7.06 continued below

☐ Mark (X) the box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type ..... FOAMING

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds <sup>1</sup>	Concentrations <sup>2,3</sup> (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
7J,7J1-7J4	Ester Silicone Surfactant	100% EW	N/A	N/A
7K,7J1-7J4	Tin Catalysts	100% EW	N/A	N/A
7L,7J1-7J4	Ether Amine Catalyst	100% EW	N/A	N/A

7.06 continued below

☐ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s).  
 If a process block flow diagram is provided for more than one process type, photocopy  
 this question and complete it separately for each process type. (Refer to the  
CBI instructions for further explanation and an example.)

☐ Process type ..... FOAMING

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds <sup>1</sup>	Concen- trations <sup>2,3</sup> (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
<u>7M,7J1-7J4</u>	<u>Anti-Oxidants</u>	<u>100% EW</u>	<u>N/A</u>	<u>N/A</u>
<u>7N,7J1-7J4</u>	<u>Pigments</u>	<u>100% EW</u>	<u>N/A</u>	<u>N/A</u>
<u>7P,7J1-7J4</u>	<u>Ester Cell Opener</u>	<u>100% EW</u>	<u>N/A</u>	<u>N/A</u>

7.06 continued below

☐ Mark this box if you attach a continuation sheet.



7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type ..... FOAMING

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds <sup>1</sup>	Concentrations <sup>2,3</sup> (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
7Q,7Q1-7Q6	Ester Amine Catalysts	100% EW	N/A	N/A
7R,7R1-7R3	Polyol	98% EW	N/A	N/A
	Silicones, FR, Catalysts	2% EW	N/A	N/A
7S,7S1-7S10	TDI 80/20	99.9% AW	Hydrolyzable Chloride	0.1% EW

7.06 continued below

☐ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type ..... FOAMING

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds <sup>1</sup>	Concentrations <sup>2,3</sup> (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
7T,7S4-7S10	TDI 65/35	99.9% EW	Hydrolyzable Chloride	0.1% EW
7FL	Polyol	98% EW	N/A	N/A
	Silicones, FR, Catalysts	2% EW	N/A	N/A
7V1-7V3	Carbon Dioxide	83.18% EW	N/A	N/A
	Auxillary Blowing Agent	16.77% EW	N/A	N/A
	TDI	.04% EW	N/A	N/A

7.06 continued below

☐ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s).  
If a process block flow diagram is provided for more than one process type, photocopy  
this question and complete it separately for each process type. (Refer to the  
CBI instructions for further explanation and an example.)

☐ Process type ..... FOAMING

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds <sup>1</sup>	Concen- trations <sup>2,3</sup> (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
7V4	Carbon Dioxide	83.22% EW	N/A	N/A
	Auxillary Blowing Agents	16.78% EW	N/A	N/A
7U1-7U6	Slabstock Polyurethane Flexible Foam	100% EW	N/A	N/A
7U7	Interially Generated Scrap Polyurethane Flexible Foam	100% EW	N/A	N/A

7.06 continued below

☐ Mark (X) this box if you attach a continuation sheet.



7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type ..... REBOND

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds <sup>1</sup>	Concentrations <sup>2,3</sup> (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
7A,7A1-7A6	Regular Polyol	100% EW	N/A	N/A
7S,7S1-7S6	TDI 80/20	99.9% AW	Hydrolyzable Chloride	0.1% EW
7B1-7B3	Binder	100% EW	N/A	N/A

7.06 continued below

☐ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type ..... REBOND

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds <sup>1</sup>	Concentrations <sup>2,3</sup> (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
<u>7P1,7P2</u>	<u>Pigments</u>	<u>100% EW</u>	<u>N/A</u>	<u>N/A</u>
<u>7B4</u>	<u>Binder</u>	<u>95.86% EW</u>	<u>N/A</u>	<u>N/A</u>
	<u>Pigments</u>	<u>4.14% EW</u>	<u>N/A</u>	<u>N/A</u>
<u>7F1</u>	<u>Bailed Flexible Urethane Foam</u>	<u>100% EW</u>	<u>N/A</u>	<u>N/A</u>

7.06 continued below

☐ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type ..... REBOND

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds <sup>1</sup>	Concentrations <sup>2,3</sup> (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
7F2	Internal Scrap Foam	100% EW	N/A	N/A
7F3-7F5	Shredded Foam	100% EW	N/A	N/A
7B5	Shredded Foam	92.72% EW	N/A	N/A
	Binder	6.98% EW	N/A	N/A
	Pigments	.30% EW	N/A	N/A

7.06 continued below

☐ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s).  
If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type ..... REBOND

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds <sup>1</sup>	Concentrations <sup>2,3</sup> (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
7ST1	Steam	100% EW	N/A	N/A
7V1	Steam	100% EW	N/A	N/A
7R1-7R4	Rebonded Foam	100% EW	N/A	N/A

7.06 continued below

☐ Mark (C) this box if you attach a continuation sheet.



7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type ..... REBOND

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds <sup>1</sup>	Concentrations <sup>2,3</sup> (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
7R5	Internally Generate Scrap Rebonded Foam	100% EW	N/A	N/A
7R6	Net Rebonded Foam	100% EW	N/A	N/A

7.06 continued below

☐ Mark (X) this box if you attach a continuation sheet.

7.06 (continued)

<sup>1</sup>For each additive package introduced into a process stream, specify the compounds that are present in each additive package, and the concentration of each component. Assign an additive package number to each additive package and list this number in column b. (Refer to the instructions for further explanation and an example. Refer to the glossary for the definition of additive package.)

Additive Package Number	Components of Additive Package	Concentrations (% or ppm)
<u>1</u>	<u>N/A</u>	<u>N/A</u>
<u>2</u>		
<u>3</u>		
<u>4</u>		
<u>5</u>		

<sup>2</sup>Use the following codes to designate how the concentration was determined:

A = Analytical result  
E = Engineering judgement/calculation

<sup>3</sup>Use the following codes to designate how the concentration was measured:

V = Volume  
W = Weight

☐ Mark (X) this box if you attach a continuation sheet.

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SECTION 8 RESIDUAL TREATMENT GENERATION, CHARACTERIZATION, TRANSPORTATION, AND  
MANAGEMENT

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General Instructions:

For questions 8.04-8.06, provide a separate response for each residual treatment block flow diagram provided in question 8.01, 8.02 or 8.03. Identify the process type from which the information is extracted.

For questions 8.05-8.33, the Stream Identification Codes are those process streams listed in either the Section 7 or Section 8 block flow diagrams which contain residuals for each applicable waste management method.

For questions 8.07-8.33, if residuals are combined before they are handled, list those Stream Identification Codes on the same line.

Questions 8.09-8.33 refer to the waste management activities involving the residuals identified in either the Section 7 or Section 8 block flow diagrams. Not all Stream Identification Codes used in the sample answers (e.g., for the incinerator questions) have corresponding process streams identified in the block flow diagram(s). These Stream Identification codes are for illustrative purposes only.

For questions 8.11-8.33, if you have provided the information requested on one of the EPA Office of Solid Waste surveys listed below within the three years prior to your reporting year, you may submit a copy or reasonable facsimile in lieu of answering those questions which the survey addresses. The applicable surveys are: (1) Hazardous Waste Treatment, Storage, Disposal, and Recycling Survey; (2) Hazardous Waste Generator Survey; or (3) Subtitle D Industrial Facility Mail Survey.

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☐ Mark (X) this box if you attach a continuation sheet.

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PART A RESIDUAL TREATMENT PROCESS DESCRIPTION

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8.01 In accordance with the instructions, provide a residual treatment block flow diagram which describes the treatment process used for residuals identified in question 7.01.

CBI

☐ Process type ..... N/A

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☐ Mark (X) this box if you attach a continuation sheet.

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8.05 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

[illegible]

☐ Mark (X) this box if you attach a continuation sheet.

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8.05 (continued)

<sup>1</sup>Use the following codes to designate the type of hazardous waste:

I = Ignitable  
C = Corrosive  
R = Reactive  
E = EP toxic  
T = Toxic  
H = Acutely hazardous

<sup>2</sup>Use the following codes to designate the physical state of the residual:

GC = Gas (condensable at ambient temperature and pressure)  
GU = Gas (uncondensable at ambient temperature and pressure)  
SO = Solid  
SY = Sludge or slurry  
AL = Aqueous liquid  
OL = Organic liquid  
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

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8.05 continued below      N/A

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☐ Mark (X) this box if you attach a continuation sheet.

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8.05 (continued)

<sup>3</sup>For each additive package introduced into a process stream, specify the compounds that are present in each additive package, and the concentration of each component. Assign an additive package number to each additive package and list this number in column d. (Refer to the instructions for further explanation and an example. Refer to the glossary for the definition of additive package.)

Additive Package Number	Components of Additive Package	Concentrations (% or ppm)
<u>1</u>	<u>N/A</u>	<u>N/A</u>
<u>2</u>		
<u>3</u>		
<u>4</u>		
<u>5</u>		

<sup>4</sup>Use the following codes to designate how the concentration was determined:

A = Analytical result

E = Engineering judgement/calculation

8.05 continued below

☐ Mark (X) this box if you attach a continuation sheet.

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8.05 (continued)

<sup>5</sup>Use the following codes to designate how the concentration was measured:

V = Volume

W = Weight

<sup>6</sup>Specify the analytical test methods used and their detection limits in the table below. Assign a code to each test method used and list those codes in column e.

<u>Code</u>	<u>Method</u>	<u>Detection Limit</u> <u>(± ug/l)</u>
<u>1</u>	N/A	N/A
<u>2</u>		
<u>3</u>		
<u>4</u>		
<u>5</u>		
<u>6</u>		

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☐ Mark (X) this box if you attach a continuation sheet.

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CBI

<sup>2</sup>Use the codes provided in Exhibit 8-2 to designate the management methods

58

8.22 Describe the combustion chamber design parameters for each of the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

☐

Incinerator	Combustion Chamber Temperature (°C)		Location of Temperature Monitor		Residence Time In Combustion Chamber (seconds)	
	Primary	Secondary	Primary	Secondary	Primary	Secondary
1						
2						
3						

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes ..... 1

No ..... 2

8.23 Complete the following table for the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

☐

Incinerator	Air Pollution Control Device <sup>1</sup>	Types of Emissions Data Available
1	N/A	N/A
2	N/A	N/A
3	N/A	N/A

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response. N/A

Yes ..... 1

No ..... 2

<sup>1</sup>Use the following codes to designate the air pollution control device:

S = Scrubber (include type of scrubber in parenthesis)

E = Electrostatic precipitator

O = Other (specify) \_\_\_\_\_

☐ Mark (X) this box if you attach a continuation sheet.

PART A EMPLOYMENT AND POTENTIAL EXPOSURE PROFILE

9.01 Mark (X) the appropriate column to indicate whether your company maintains records on the following data elements for hourly and salaried workers. Specify for each data element the year in which you began maintaining records and the number of years the records for that data element are maintained. (Refer to the instructions for further explanation and an example.)

CBI

☐

Data Element	Data are Maintained for:		Year in Which Data Collection Began	Number of Years Records Are Maintained
	Hourly Workers	Salaried Workers		
Date of hire	<u>X</u>	<u>X</u>	<u>1978</u>	<u>Permanent</u>
Age at hire	<u>X</u>	<u>X</u>	<u>1978</u>	<u>Permanent</u>
Work history of individual before employment at your facility	<u>X</u>	<u>X</u>	<u>1978</u>	<u>Permanent</u>
Sex	<u>X</u>	<u>X</u>	<u>1978</u>	<u>Permanent</u>
Race	<u>X</u>	<u>X</u>	<u>1978</u>	<u>Permanent</u>
Job titles	<u>X</u>	<u>X</u>	<u>1978</u>	<u>Permanent</u>
Start date for each job title	<u>X</u>	<u>X</u>	<u>1978</u>	<u>Permanent</u>
End date for each job title	<u>X</u>	<u>X</u>	<u>1978</u>	<u>Permanent</u>
Work area industrial hygiene monitoring data	<u>X</u>	<u>X</u>	<u>1985</u>	<u>Permanent</u>
Personal employee monitoring data	<u>X</u>	<u>X</u>	<u>1985</u>	<u>Permanent</u>
Employee medical history	<u>X</u>	<u>X</u>	<u>1978</u>	<u>Permanent</u>
Employee smoking history	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Accident history	<u>X</u>	<u>X</u>	<u>1978</u>	<u>Permanent</u>
Retirement date	<u>X</u>	<u>X</u>	<u>1988</u>	<u>Permanent</u>
Termination date	<u>X</u>	<u>X</u>	<u>1978</u>	<u>Permanent</u>
Vital status of retirees	<u>N/a</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Cause of death data	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>

☐ Mark (X) this box if you attach a continuation sheet.

9.02 In accordance with the instructions, complete the following table for each activity in which you engage.

CBI

FOAMING

☐

a.	b.	c.	d.	e.
<u>Activity</u>	<u>Process Category</u>	<u>Yearly Quantity (kg)</u>	<u>Total Workers</u>	<u>Total Worker-Hours</u>
Manufacture of the listed substance	Enclosed	N/A		
	Controlled Release	N/A		
	Open	N/A		
On-site use as reactant	Enclosed	N/A		
	Controlled Release	2690256	15	25964
	Open	N/A		
On-site use as nonreactant	Enclosed	N/A		
	Controlled Release	N/A		
	Open	N/A		
On-site preparation of products	Enclosed	N/A		
	Controlled Release	N/A		
	Open	N/A		

☒ Mark (X) this box if you attach a continuation sheet.

9.02 In accordance with the instructions, complete the following table for each activity in which you engage.

CBI

REBOND

☐

a.	b.	c.	d.	e.
<u>Activity</u>	<u>Process Category</u>	<u>Yearly Quantity (kg)</u>	<u>Total Workers</u>	<u>Total Worker-Hours</u>
Manufacture of the listed substance	Enclosed	N/A		
	Controlled Release	N/A		
	Open	N/A		
On-site use as reactant	Enclosed	N/A		
	Controlled Release	181196	41	94779
	Open	N/A		
On-site use as nonreactant	Enclosed	N/A		
	Controlled Release	N/A		
	Open	N/A		
On-site preparation of products	Enclosed	N/A		
	Controlled Release	N/A		
	Open	N/A		

☐ Mark (X) this box if you attach a continuation sheet.

9.03 Provide a descriptive job title for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance.

CBI

FOAMING

☐

Labor Category

Descriptive Job Title

A

Foam Department Supervisor

B

Foam Machine Operator

C

Assistant Foam Machine Operator

D

Tank Foam Operator

E

Saw Operator

F

Head Assembler

G

Utility/Clean-Up

H

Maintenance Mechanic B

I

Maintenance Assistant

J

☒ Mark (X) this box if you attach a continuation sheet.

9.03 Provide a descriptive job title for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance.

CBI

REBOND

☐

Labor Category

Descriptive Job Title

A Rebond Supervisor

B Mold Operator

C Granulator Operator

D Material Handler

E Peeler Operator

F Laminator Operator

G Assistant Laminator Operator

H Hayford Operator

I Packer

J Rebond Bale Inventory

☐ Mark (X) this box if you attach a continuation sheet.

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9.04 In accordance with the instructions, provide your process block flow diagram(s) and indicate associated work areas.

CBI

☐ Process type ..... 

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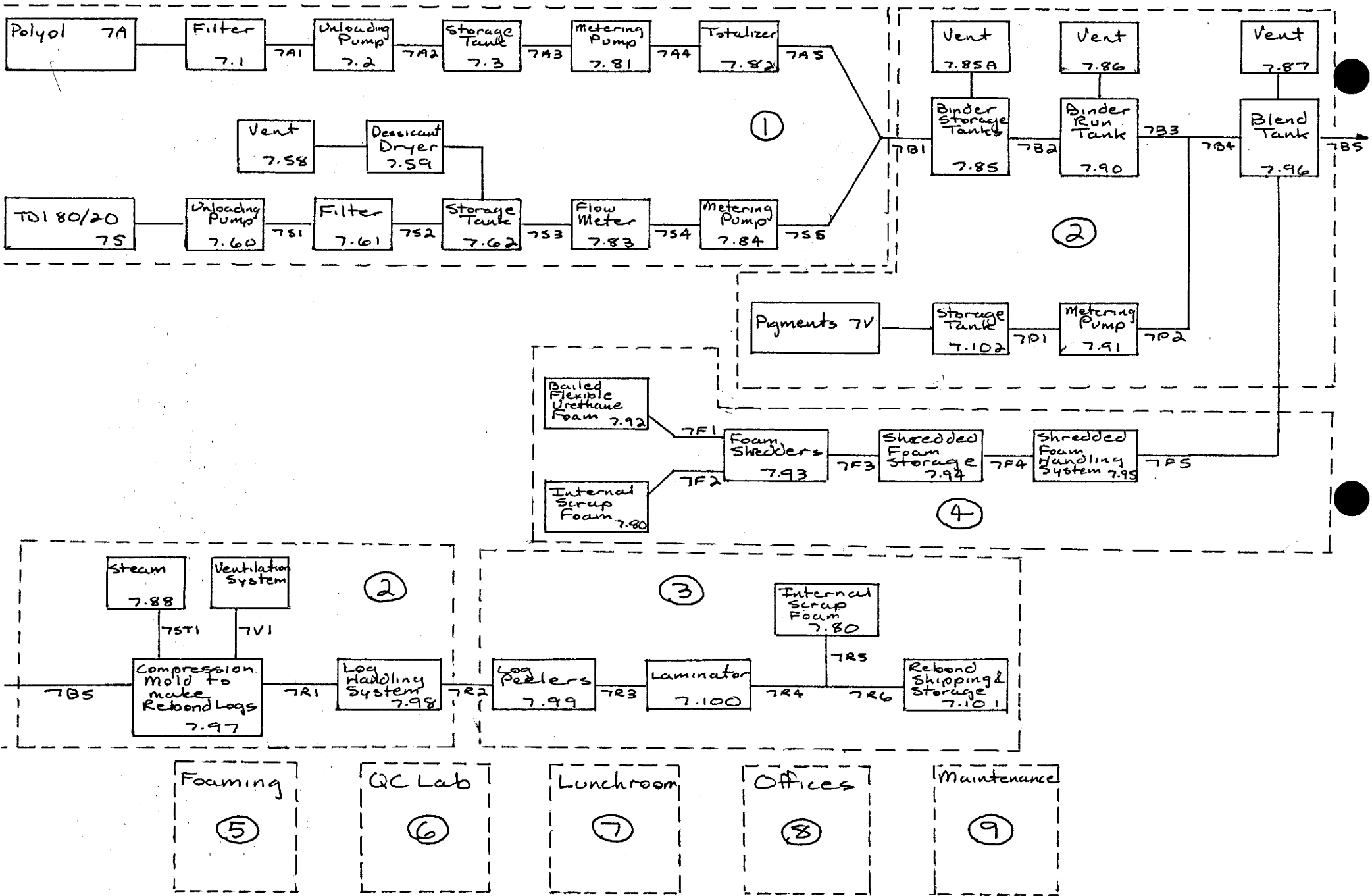
☐ Mark (X) this box if you attach a continuation sheet.

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9.05 Describe the various work area(s) shown in question 9.04 that encompass workers who may potentially come in contact with or be exposed to the listed substance. Add any additional areas not shown in the process block flow diagram in question 7.01 or 7.02. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... FOAMING

Work Area ID

Description of Work Areas and Worker Activities

1	Foamline machines and storage tanks- workers run machines.
2	Cut-Off Saw- Worker Operates Saw
3	Foam Curing and Storage Area- Bun conveyor system and overhead crane used.
4	Foam fabrication- Workers operate various cutting, peeling, and Laminating equipment
5	Shipping and Storage- Workers operate forklifts to move and load foam
6	Rebond- Workers operate foam shredders, molding equipment and rebond peeler and laminator
7	Q.C. Lab- Workers test physical properties of foam and rebond production
8	Lunchroom
9	Offices
10	Maintenance

☒ Mark (X) this box if you attach a continuation sheet.

9.05 Describe the various work area(s) shown in question 9.04 that encompass workers who may potentially come in contact with or be exposed to the listed substance. Add any additional areas not shown in the process block flow diagram in question 7.01 or 7.02. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... REBOND

Work Area ID

Description of Work Areas and Worker Activities

1	Foamline Machines and Storage Tank-Worker makes Binder for Rebond.
2	Rebond Molding system and binder storage tank- Workers Operate System.
3	Rebond Peelers, Hot Film Laminator, and Rebond Shipping and Storage.
4	Foam Shredding- Workers operate foam shredder.
5	Foaming Operation, Foam Fabrication and Foam Shipping and Storage.
6	Q.C. Lab- Workers test physical properties of foam and rebond production.
7	Lunchroom
8	Offices
9	Maintenance
10	

☐ Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

☐ Process type ..... FOAMING

Work area ..... 1

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance <sup>1</sup>	Average Length of Exposure Per Day <sup>2</sup>	Number of Days per Year Exposed
A	1	Inhalation	GU	D	252
B	1	Inhalation	GU	D	252
C	1	Inhalation	GU	D	252
D	1	Inhalation	GU	D	252
F	1	Inhalation	GU	D	252
G	1	Inhalation	GU	D	252
H	1	Inhalation	GU	D	252
I	1	Inhalation	GU	D	252

<sup>1</sup>Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)  
 GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)  
 SO = Solid

SY = Sludge or slurry  
 AL = Aqueous liquid  
 OL = Organic liquid  
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

<sup>2</sup>Use the following codes to designate average length of exposure per day:

A = 15 minutes or less  
 B = Greater than 15 minutes, but not exceeding 1 hour  
 C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours  
 E = Greater than 4 hours, but not exceeding 8 hours  
 F = Greater than 8 hours

☒ Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

☐ Process type ..... FOAMING

Work area ..... 2

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance <sup>1</sup>	Average Length of Exposure Per Day <sup>2</sup>	Number of Days per Year Exposed
E	1	Inhalation	GU	D	252
G	3	Inhalation	GU	D	252

<sup>1</sup>Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)	SY = Sludge or slurry
GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)	AL = Aqueous liquid
SO = Solid	OL = Organic liquid
	IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

<sup>2</sup>Use the following codes to designate average length of exposure per day:

A = 15 minutes or less	D = Greater than 2 hours, but not exceeding 4 hours
B = Greater than 15 minutes, but not exceeding 1 hour	E = Greater than 4 hours, but not exceeding 8 hours
C = Greater than one hour, but not exceeding 2 hours	F = Greater than 8 hours

☐ Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question CBI and complete it separately for each process type and work area.

☐ Process type ..... REBOND

Work area ..... 1

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance <sup>1</sup>	Average Length of Exposure Per Day <sup>2</sup>	Number of Days per Year Exposed
B	1	Inhalation	GU	B	260

<sup>1</sup>Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)  
 GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)  
 SO = Solid

SY = Sludge or slurry  
 AL = Aqueous liquid  
 OL = Organic liquid  
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

<sup>2</sup>Use the following codes to designate average length of exposure per day:

A = 15 minutes or less  
 B = Greater than 15 minutes, but not exceeding 1 hour  
 C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours  
 E = Greater than 4 hours, but not exceeding 8 hours  
 F = Greater than 8 hours

☐ Mark (X) this box if you attach a continuation sheet.



9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

☐ Process type ..... REBOND

Work area ..... 2

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance <sup>1</sup>	Average Length of Exposure Per Day <sup>2</sup>	Number of Days per Year Exposed
A	2	Inhalation	GU	E	260
B	4	Inhalation	GU	E	260

<sup>1</sup>Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)	SY = Sludge or slurry
GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)	AL = Aqueous liquid
SO = Solid	OL = Organic liquid
	IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

<sup>2</sup>Use the following codes to designate average length of exposure per day:

A = 15 minutes or less	D = Greater than 2 hours, but not exceeding 4 hours
B = Greater than 15 minutes, but not exceeding 1 hour	E = Greater than 4 hours, but not exceeding 8 hours
C = Greater than one hour, but not exceeding 2 hours	F = Greater than 8 hours

☐ Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

☐ Process type ..... REBOND

Work area ..... 4

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance <sup>1</sup>	Average Length of Exposure Per Day <sup>2</sup>	Number of Days per Year Exposed
E	4	Inhalation	GU	E	260

<sup>1</sup>Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)  
 GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)  
 SO = Solid

SY = Sludge or slurry  
 AL = Aqueous liquid  
 OL = Organic liquid  
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

<sup>2</sup>Use the following codes to designate average length of exposure per day:

A = 15 minutes or less  
 B = Greater than 15 minutes, but not exceeding 1 hour  
 C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours  
 E = Greater than 4 hours, but not exceeding 8 hours  
 F = Greater than 8 hours

☐ Mark (X) this box if you attach a continuation sheet.

9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... FOAMING

Work area ..... 1

<u>Labor Category</u>	<u>8-hour TWA Exposure Level (ppm, mg/m<sup>3</sup>, other-specify)</u>	<u>15-Minute Peak Exposure Level (ppm, mg/m<sup>3</sup>, other-specify)</u>
<u>A</u>	<u>UK</u>	<u>UK</u>
<u>B</u>	<u>.0014 ppm</u>	<u>.015 ppm</u>
<u>C</u>	<u>UK</u>	<u>UK</u>
<u>D</u>	<u>UK</u>	<u>UK</u>
<u>F</u>	<u>UK</u>	<u>UK</u>
<u>G</u>	<u>UK</u>	<u>UK</u>
<u>H</u>	<u>UK</u>	<u>UK</u>
<u>I</u>	<u>UK</u>	<u>UK</u>
<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>

NOTE: DATA IS FROM 1989 MONITORING.

NO DATA AVAILABLE 1988

☒ Mark (X) this box if you attach a continuation sheet.

CBI

Work area ..... 2

NO DATA AVAILABLE 1988.

94 ~ 1

CBI

Work area ..... 1

☐ Mark (X) this box if you attach a continuation sheet.

**CBI**

Work area ..... 2

NO DATA AVAILABLE FOR 1988.

94 - 3

9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... REBOND

Work area ..... 4

<u>Labor Category</u>	<u>8-hour TWA Exposure Level (ppm, mg/m<sup>3</sup>, other-specify)</u>	<u>15-Minute Peak Exposure Level (ppm, mg/m<sup>3</sup>, other-specify)</u>
<u>E</u>	<u>.0003 ppm</u>	<u>.003 ppm</u>

NOTE: DATA IS FROM 1989 MONITORING.

NO DATA AVAILABLE FOR 1988.

☐ Mark (X) this box if you attach a continuation sheet.

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PART B WORK PLACE MONITORING PROGRAM

---

9.08 If you monitor worker exposure to the listed substance, complete the following table.

CBI

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<u>Sample/Test</u>	<u>Work Area ID</u>	<u>Testing Frequency (per year)</u>	<u>Number of Samples (per test)</u>	<u>Who Samples<sup>1</sup></u>	<u>Analyzed In-House (Y/N)</u>	<u>Number of Years Records Maintained</u>
Personal breathing zone	Foam 1,2 Rebond 1,2,4	1	Various	A,D	N	Permanent
General work area (air)	Foaming 1,2 Rebond 1,2,4	1	Various	A,D	N	Permanent
Wipe samples	N/A					
Adhesive patches	N/A					
Blood samples	N/A					
Urine samples	N/A					
Respiratory samples	N/A					
Allergy tests	N/A					
Other (specify)						
Other (specify)						
Other (specify)						

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<sup>1</sup>Use the following codes to designate who takes the monitoring samples:

A = Plant industrial hygienist

B = Insurance carrier

C = OSHA consultant

D = Other (specify) Chemical Supplier

---

☐ Mark (X) this box if you attach a continuation sheet.

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9.09 For each sample type identified in question 9.08, describe the type of sampling and analytical methodology used for each type of sample.

<input type="checkbox"/> Sample Type	Sampling and Analytical Methodology
Personal Breathing Zone	GMD Personnel Continuous Monitors Colometric Paper-Tape principle method used.
General Work Area	GMD Personnel Continuous Monitors Colometric Paper-Tape principle method used.

9.10 If you conduct personal and/or ambient air monitoring for the listed substance, specify the following information for each equipment type used.

<input type="checkbox"/> Equipment Type <sup>1</sup>	Detection Limit <sup>2</sup>	Manufacturer	Averaging Time (hr)	Model Number
D	.001A	GMD	1-8hr	PCM

<sup>1</sup>Use the following codes to designate personal air monitoring equipment types:

- A = Passive dosimeter
- B = Detector tube
- C = Charcoal filtration tube with pump
- D = Other (specify) GMD Personnel Continuous Monitors

Use the following codes to designate ambient air monitoring equipment types:

- E = Stationary monitors located within work area
- F = Stationary monitors located within facility
- G = Stationary monitors located at plant boundary
- H = Mobile monitoring equipment (specify) \_\_\_\_\_
- I = Other (specify) \_\_\_\_\_

<sup>2</sup>Use the following codes to designate detection limit units:

- A = ppm
- B = Fibers/cubic centimeter (f/cc)
- C = Micrograms/cubic meter ( $\mu/m^3$ )

☐ Mark (X) this box if you attach a continuation sheet.

9.11 If you conduct routine medical tests for monitoring the health effects of exposure to the listed substance, specify the type and frequency of the tests.

CBI

<input type="checkbox"/>	<u>Test Description</u>	<u>Frequency</u> <u>(weekly, monthly, yearly, etc.)</u>
	N/A	N/A

☐ Mark (X) this box if you attach a continuation sheet.

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PART C ENGINEERING CONTROLS

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9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

FOAMING

☐ Process type ..... 

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Work area ..... 1 & 2 

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<u>Engineering Controls</u>	<u>Used (Y/N)</u>	<u>Year Installed</u>	<u>Upgraded (Y/N)</u>	<u>Year Upgraded</u>
Ventilation:				
Local exhaust	Y	1978	Y	1989
General dilution	N			
Other (specify)				
<hr/>	N/A			
Vessel emission controls	N			
Mechanical loading or packaging equipment	N/A			
Other (specify)				
<hr/>	N/A			

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☒ Mark (X) this box if you attach a continuation sheet.

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PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... REBOND

Work area .....

<u>Engineering Controls</u>	<u>Used (Y/N)</u>	<u>Year Installed</u>	<u>Upgraded (Y/N)</u>	<u>Year Upgraded</u>
Ventilation:				
Local exhaust	Y	1980	y	1987
General dilution	N			
Other (specify)	N/A			
Vessel emission controls	N			
Mechanical loading or packaging equipment	N/A			
Other (specify)	N/A			

☐ Mark (X) this box if you attach a continuation sheet.

9.13 Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... FOAMING

Work area ..... 1 & 2

Equipment or Process Modification	Reduction in Worker Exposure Per Year (%)
Improved encapsulation and ventilation on cut-off saws	UK
Installation of additional make-up unit in Foam Dept to assure proper functioning of ventilation system	UK

☒ Mark (X) this box if you attach a continuation sheet.

9.13 Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... REBOND

Work area ..... 1, 2, & 4

Equipment or Process Modification	Reduction in Worker Exposure Per Year (%)

☐ Mark (X) this box if you attach a continuation sheet.

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PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

---

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... FOAMING

Work area ..... 1 & 2

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	<u>N</u>
Safety goggles/glasses	<u>y</u>
Face shields	<u>N</u>
Coveralls	<u>N</u>
Bib aprons	<u>N</u>
Chemical-resistant gloves	<u>Y</u>
Other (specify)	<u>N/A</u>
_____	_____
_____	_____

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☒ Mark (X) this box if you attach a continuation sheet.

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PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

---

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... REBOND

Work area ..... 1, 2, & 4

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	<u>N</u>
Safety goggles/glasses	<u>N</u>
Face shields	<u>N</u>
Coveralls	<u>N</u>
Bib aprons	<u>N</u>
Chemical-resistant gloves	<u>N</u>
Other (specify)	
Ear Plugs	<u>N</u>

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☐ Mark (X) this box if you attach a continuation sheet.

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9.15 If workers use respirators when working with the listed substance, specify for each process type, the work areas where the respirators are used, the type of respirators used, the average usage, whether or not the respirators were fit tested, and the type and frequency of the fit tests. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... REBOND

Work Area	Respirator Type	Average Usage <sup>1</sup>	Fit Tested (Y/N)	Type of Fit Test <sup>2</sup>	Frequency of Fit Tests (per year)
2	Cartridge, Full Face Masks	E	N	N/A	N/A

<sup>1</sup>Use the following codes to designate average usage:

A = Daily  
 B = Weekly  
 C = Monthly  
 D = Once a year  
 E = Other (specify) Cleaning out blend tanks (2-3 times/year)

<sup>2</sup>Use the following codes to designate the type of fit test:

QL = Qualitative  
 QT = Quantitative

☒ Mark (X) this box if you attach a continuation sheet.

9.15 If workers use respirators when working with the listed substance, specify for each process type, the work areas where the respirators are used, the type of respirators used, the average usage, whether or not the respirators were fit tested, and the type and frequency of the fit tests. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... FOAMING

<u>Work Area</u>	<u>Respirator Type</u>	<u>Average Usage<sup>1</sup></u>	<u>Fit Tested (Y/N)</u>	<u>Type of Fit Test<sup>2</sup></u>	<u>Frequency of Fit Tests (per year)</u>
<u>1</u>	<u>Positive Pressure Full Face Mask</u>	<u>E</u>	<u>N</u>	<u>N/A</u>	<u>N/A</u>
<u>2</u>	<u>Positive Pressure Full Face Mask</u>	<u>E</u>	<u>N</u>	<u>N/A</u>	<u>N/A</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

<sup>1</sup>Use the following codes to designate average usage:

A = Daily  
 B = Weekly  
 C = Monthly  
 D = Once a year  
 E = Other (specify) Emergencies

<sup>2</sup>Use the following codes to designate the type of fit test:

QL = Qualitative  
 QT = Quantitative

☐ Mark (X) this box if you attach a continuation sheet.

PART E WORK PRACTICES

- 9.19 Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

CBI

☐

Process type ..... FOAMING

Work area ..... 1 & 2

OSHA Right-to-Know

TDI Personnel Monitoring

Warning And Authorized Employee Signs

- 9.20 Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type ..... N/A

Work area .....

<u>Housekeeping Tasks</u>	<u>Less Than Once Per Day</u>	<u>1-2 Times Per Day</u>	<u>3-4 Times Per Day</u>	<u>More Than 4 Times Per Day</u>
Sweeping	_____	_____	_____	_____
Vacuuming	_____	_____	_____	_____
Water flushing of floors	_____	_____	_____	_____
Other (specify)	_____	_____	_____	_____

☒ Mark (X) this box if you attach a continuation sheet.

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PART E WORK PRACTICES

---

- 9.19 Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

CBI

☐

Process type ..... REBOND

Work area ..... 1, 2, & 4

OSHA Right-to-Know

TDI Personnel Monitoring

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- 
- 9.20 Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type ..... N/A

Work area .....

<u>Housekeeping Tasks</u>	<u>Less Than Once Per Day</u>	<u>1-2 Times Per Day</u>	<u>3-4 Times Per Day</u>	<u>More Than 4 Times Per Day</u>
Sweeping	_____	_____	_____	_____
Vacuuming	_____	_____	_____	_____
Water flushing of floors	_____	_____	_____	_____
Other (specify)	_____	_____	_____	_____
_____	_____	_____	_____	_____

---

☐ Mark (X) this box if you attach a continuation sheet.

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9.21 Do you have a written medical action plan for responding to routine or emergency exposure to the listed substance?

Routine exposure

Yes ..... 1

No ..... 2

Emergency exposure

Yes ..... 1

No ..... 2

If yes, where are copies of the plan maintained?

Routine exposure: \_\_\_\_\_

Emergency exposure: \_\_\_\_\_

---

9.22 Do you have a written leak and spill cleanup plan that addresses the listed substance? Circle the appropriate response.

Yes ..... 1

No ..... 2

If yes, where are copies of the plan maintained? Offices of Plant Engineering, Nurse, Plant Manager, Foam Department Manager.

Has this plan been coordinated with state or local government response organizations? Circle the appropriate response.

Yes ..... 1

No ..... 2

---

9.23 Who is responsible for monitoring worker safety at your facility? Circle the appropriate response.

Plant safety specialist ..... 1

Insurance carrier ..... 2

OSHA consultant ..... 3

Other (specify) \_\_\_\_\_ 4

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☐ Mark (X) this box if you attach a continuation sheet.

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## SECTION 10 ENVIRONMENTAL RELEASE

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### General Instructions:

Complete Part E (questions 10.23-10.35) for each non-routine release involving the listed substance that occurred during the reporting year. Report on all releases that are equal to or greater than the listed substance's reportable quantity value, RQ, unless the release is federally permitted as defined in 42 U.S.C. 9601, or is specifically excluded under the definition of release as defined in 40 CFR 302.3(22). Reportable quantities are codified in 40 CFR Part 302. If the listed substance is not a hazardous substance under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and, thus, does not have an RQ, then report releases that exceed 2,270 kg. If such a substance however, is designated as a CERCLA hazardous substance, then report those releases that are equal to or greater than the RQ. The facility may have answered these questions or similar questions under the Agency's Accidental Release Information Program and may already have this information readily available. Assign a number to each release and use this number throughout this part to identify the release. Releases over more than a 24-hour period are not single releases, i.e., the release of a chemical substance equal to or greater than an RQ must be reported as a separate release for each 24-hour period the release exceeds the RQ.

For questions 10.25-10.35, answer the questions for each release identified in question 10.23. Photocopy these questions and complete them separately for each release.

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### PART A GENERAL INFORMATION

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10.01 Where is your facility located? Circle all appropriate responses.

#### CBI

- ☐ Industrial area ..... ①
- Urban area ..... 2
- Residential area ..... 3
- Agricultural area ..... 4
- Rural area ..... ⑤
- Adjacent to a park or a recreational area ..... 6
- Within 1 mile of a navigable waterway ..... 7
- Within 1 mile of a school, university, hospital, or nursing home facility ..... 8
- Within 1 mile of a non-navigable waterway ..... 9
- Other (specify) \_\_\_\_\_ ..... 10

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☐ Mark (X) this box if you attach a continuation sheet.

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10.02 Specify the exact location of your facility (from central point where process unit is located) in terms of latitude and longitude or Universal Transverse Mercader (UTM) coordinates.

Latitude ..... 41 ° 20 , 45 "

Longitude ..... 85 ° 03 , 45 "

UTM coordinates ..... Zone \_\_\_\_\_, Northing \_\_\_\_\_, Easting \_\_\_\_\_

10.03 If you monitor meteorological conditions in the vicinity of your facility, provide the following information.

Average annual precipitation ..... UK inches/year

Predominant wind direction ..... UK

10.04 Indicate the depth to groundwater below your facility.

Depth to groundwater ..... 2 meters

10.05 For each on-site activity listed, indicate (Y/N/NA) all routine releases of the listed substance to the environment. (Refer to the instructions for a definition of CBI Y, N, and NA.)

On-Site Activity	Environmental Release		
	Air	Water	Land
Manufacturing	N/A	N/A	N/A
Importing	N/A	N/A	N/A
Processing	Y	N	N
Otherwise used	N/A	N/A	N/A
Product or residual storage	Y	N	N
Disposal	N/A	N/A	N/A
Transport	N	N	N

☐ Mark (X) this box if you attach a continuation sheet.

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10.06 Provide the following information for the listed substance and specify the level of precision for each item. (Refer to the instructions for further explanation and an example.)

CBI

☐

Quantity discharged to the air .....	<u>135</u>	kg/yr ± <u>10</u> %
Quantity discharged in wastewaters .....	<u>N/A</u>	kg/yr ± ____ %
Quantity managed as other waste in on-site treatment, storage, or disposal units .....	<u>N/A</u>	kg/yr ± ____ %
Quantity managed as other waste in off-site treatment, storage, or disposal units .....	<u>N/A</u>	kg/yr ± ____ %

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☐ Mark (X) this box if you attach a continuation sheet.

---



10.08 Describe the control technologies used to minimize release of the listed substance for each process stream containing the listed substance as identified in your process block or residual treatment block flow diagram(s). Photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... FOAMING

<u>Stream ID Code</u>	<u>Control Technology</u>	<u>Percent Efficiency</u>
7FL	Auto Start/Stop	100%

NOTE: AUTO START/STOP ASSURES NO TDI  
APPEARS IN HEAD FLUSHINGS.

☐ Mark (X) this box if you attach a continuation sheet.

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PART B RELEASE TO AIR

---

- 10.09 Point Source Emissions -- Identify each emission point source containing the listed substance in terms of a Stream ID Code as identified in your process block or residual treatment block flow diagram(s), and provide a description of each point source. Do not include raw material and product storage vents, or fugitive emission sources (e.g., equipment leaks). Photocopy this question and complete it separately for each process type.

CBI

☐

Process type ..... FOAMING

---

Point Source  
ID Code

Description of Emission Point Source

7V1,7V2,7V3

Foamline and Cut-Off Saw Ventilation

\_\_\_\_\_

\_\_\_\_\_

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☒ Mark (X) this box if you attach a continuation sheet.

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PART B RELEASE TO AIR

- 10.09 Point Source Emissions -- Identify each emission point source containing the listed substance in terms of a Stream ID Code as identified in your process block or residual treatment block flow diagram(s), and provide a description of each point source. Do not include raw material and product storage vents, or fugitive emission sources (e.g., equipment leaks). Photocopy this question and complete it separately for each process type.

CBI

☐

Process type ..... REBOND

Point Source  
ID Code

Description of Emission Point Source

N/A

N/A

☐ Mark (X) this box if you attach a continuation sheet.

☐ Mark (X) this box if you attach a continuation sheet.

10.10 Emission Characteristics -- Characterize the emissions for each Point Source ID Code identified in question 10.09 by completing the following table.

CBI <input type="checkbox"/>		Point Source ID Code	Physical State <sup>1</sup>	Average Emissions (kg/day)	Frequency <sup>2</sup> (days/yr)	Duration <sup>3</sup> (min/day)	Average Emission Factor <sup>4</sup>	Maximum Emission Rate (kg/min)	Maximum Emission Rate Frequency (events/yr)	Maximum Emission Rate Duration (min/event)
7V1, 7V2, 7V3			V	.535	252	142	.00005	UK	UK	UK

<sup>1</sup>Use the following codes to designate physical state at the point of release:

G = Gas; V = Vapor; P = Particulate; A = Aerosol; O = Other (specify) \_\_\_\_\_

<sup>2</sup>Frequency of emission at any level of emission

<sup>3</sup>Duration of emission at any level of emission

<sup>4</sup>Average Emission Factor -- Provide estimated ( $\pm$  25 percent) emission factor (kg of emission per kg of production of listed substance)

10.11 Stack Parameters -- Identify the stack parameters for each Point Source ID Code identified in question 10.09 by completing the following table.

CBI

☐

Point Source ID Code	Stack Height(m)	Stack Inner Diameter (at outlet) (m)	Exhaust Temperature (°C)	Emission Exit Velocity (m/sec)	Building Height(m) <sup>1</sup>	Building Width(m) <sup>2</sup>	Vent Type <sup>3</sup>
7V1	7.3	.508	Ambient	22.4	6.4	73	V
7V2	7.3	.508	Ambient	22.4	6.4	73	V
7V3	7.3	.508	Ambient	22.4	6.4	73	V

<sup>1</sup>Height of attached or adjacent building

<sup>2</sup>Width of attached or adjacent building

<sup>3</sup>Use the following codes to designate vent type:

H = Horizontal

V = Vertical

☐ Mark (X) this box if you attach a continuation sheet.

10.12 If the listed substance is emitted in particulate form, indicate the particle size distribution for each Point Source ID Code identified in question 10.09. Photocopy this question and complete it separately for each emission point source.

CBI

☐

Point source ID code ..... N/A

Size Range (microns)

Mass Fraction (% ± % precision)

< 1

≥ 1 to < 10

≥ 10 to < 30

≥ 30 to < 50

≥ 50 to < 100

≥ 100 to < 500

≥ 500

Total = 100%

☐ Mark (X) this box if you attach a continuation sheet.

PART C FUGITIVE EMISSIONS

10.13 Equipment Leaks -- Complete the following table by providing the number of equipment types listed which are exposed to the listed substance and which are in service according to the specified weight percent of the listed substance passing through the component. Do this for each process type identified in your process block or residual treatment block flow diagram(s). Do not include equipment types that are not exposed to the listed substance. If this is a batch or intermittently operated process, give an overall percentage of time per year that the process type is exposed to the listed substance. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... FOAMING

Percentage of time per year that the listed substance is exposed to this process type ..... 100 %

Equipment Type	Number of Components in Service by Weight Percent of Listed Substance in Process Stream					Greater than 99%
	Less than 5%	5-10%	11-25%	26-75%	76-99%	
Pump seals <sup>1</sup>						
Packed						0
Mechanical						4
Double mechanical <sup>2</sup>						0
Compressor seals <sup>1</sup>						0
Flanges						24
Valves						
Gas <sup>3</sup>						0
Liquid						41
Pressure relief devices <sup>4</sup> (Gas or vapor only)						2
Sample connections						
Gas						0
Liquid						7
Open-ended lines <sup>5</sup> (e.g., purge, vent)						
Gas						0
Liquid						0

<sup>1</sup>List the number of pump and compressor seals, rather than the number of pumps or compressors

10.13 continued on next page

☒ Mark (X) this box if you attach a continuation sheet.

PART C FUGITIVE EMISSIONS

10.13 Equipment Leaks -- Complete the following table by providing the number of equipment types listed which are exposed to the listed substance and which are in service according to the specified weight percent of the listed substance passing through the component. Do this for each process type identified in your process block or residual treatment block flow diagram(s). Do not include equipment types that are not exposed to the listed substance. If this is a batch or intermittently operated process, give an overall percentage of time per year that the process type is exposed to the listed substance. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... REBOND

Percentage of time per year that the listed substance is exposed to this process type ..... 100 %

Equipment Type	Number of Components in Service by Weight Percent of Listed Substance in Process Stream					Greater than 99%
	Less than 5%	5-10%	11-25%	26-75%	76-99%	
Pump seals <sup>1</sup>						
Packed			0			
Mechanical			0			
Double mechanical <sup>2</sup>			0			
Compressor seals <sup>1</sup>			0			
Flanges			2			
Valves						
Gas <sup>3</sup>			0			
Liquid			7			
Pressure relief devices <sup>4</sup> (Gas or vapor only)			0			
Sample connections						
Gas			0			
Liquid			1			
Open-ended lines <sup>5</sup> (e.g., purge, vent)						
Gas			0			
Liquid			0			

<sup>1</sup>List the number of pump and compressor seals, rather than the number of pumps or compressors

10.13 continued on next page

☐ Mark (X) this box if you attach a continuation sheet.



10.13 (continued)

<sup>2</sup>If double mechanical seals are operated with the barrier (B) fluid at a pressure greater than the pump stuffing box pressure and/or equipped with a sensor (S) that will detect failure of the seal system, the barrier fluid system, or both, indicate with a "B" and/or an "S", respectively

<sup>3</sup>Conditions existing in the valve during normal operation

<sup>4</sup>Report all pressure relief devices in service, including those equipped with control devices

<sup>5</sup>Lines closed during normal operation that would be used during maintenance operations

10.14 Pressure Relief Devices with Controls -- Complete the following table for those pressure relief devices identified in 10.13 to indicate which pressure relief devices in service are controlled. If a pressure relief device is not controlled, enter "None" under column c.

CBI

[ ]

a. Number of Pressure Relief Devices	b. Percent Chemical in Vessel <sup>1</sup>	c. Control Device	d. Estimated Control Efficiency <sup>2</sup>
2	100%	None	N/A

<sup>1</sup>Refer to the table in question 10.13 and record the percent range given under the heading entitled "Number of Components in Service by Weight Percent of Listed Substance" (e.g., <5%, 5-10%, 11-25%, etc.)

<sup>2</sup>The EPA assigns a control efficiency of 100 percent for equipment leaks controlled with rupture discs under normal operating conditions. The EPA assigns a control efficiency of 98 percent for emissions routed to a flare under normal operating conditions

[ ] Mark (X) this box if you attach a continuation sheet.

10.15 Equipment Leak Detection -- If a formal leak detection and repair program is in place, complete the following table regarding those leak detection and repair procedures. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... N/A

Equipment Type	Leak Detection Concentration (ppm or mg/m <sup>3</sup> ) Measured at Inches from Source	Detection Device <sup>1</sup>	Frequency of Leak Detection (per year)	Repairs Initiated (days after detection)	Repairs Completed (days after initiated)
Pump seals					
Packed	N/A	N/A	N/A	N/A	N/A
Mechanical					
Double mechanical					
Compressor seals					
Flanges					
Valves					
Gas					
Liquid					
Pressure relief devices (gas or vapor only)					
Sample connections					
Gas					
Liquid					
Open-ended lines					
Gas					
Liquid					

<sup>1</sup>Use the following codes to designate detection device:

POVA = Portable organic vapor analyzer

FPM = Fixed point monitoring

0 = Other (specify) \_\_\_\_\_

☐ Mark (X) this box if you attach a continuation sheet.

☐ Mark (X) this box if you attach a continuation sheet.

- 10.16 Raw Material, Intermediate and Product Storage Emissions - - Complete the following table by providing the information on each liquid raw material, intermediate, and product storage vessel containing the listed substance as identified in your process block or residual treatment block flow diagram(s).

CBI

☐

Vessel Type <sup>1</sup>	Floating Roof Seals <sup>2</sup>	Composition of Stored Materials <sup>3</sup>	Throughput (liters per year)	Vessel Filling Rate (gpm)	Vessel Filling Duration (min)	Vessel Inner Diameter (m)	Vessel Height (m)	Vessel Volume (l)	Operating Vessel Emission Controls <sup>4</sup>	Design Flow Rate <sup>5</sup>	Vent Diameter (cm)	Control Efficiency (%)	Basis for Estimate <sup>6</sup>
FH	N/A	100	768,936	120	208	3.66	9.15	94625	N/A	N/A	15.2	N/A	N/A
FH	N/A	100	768,936	120	208	3.66	9.15	94625	N/A	N/A	15.2	N/A	N/A
FH	N/A	100	768,936	120	208	3.66	9.15	94625	N/A	N/A	15.2	N/A	N/A
FH	N/A	100	51,813	120	66	2.44	6.41	29872	N/A	N/A	15.2	N/A	N/A

<sup>1</sup>Use the following codes to designate vessel type:

F = Fixed roof  
 CIF = Contact internal floating roof  
 NCIF = Noncontact internal floating roof  
 EFR = External floating roof  
 P = Pressure vessel (indicate pressure rating)  
 H = Horizontal  
 U = Underground

<sup>2</sup>Use the following codes to designate floating roof seals:

MS1 = Mechanical shoe, primary  
 MS2 = Shoe-mounted secondary  
 MS2R = Rim-mounted, secondary  
 LM1 = Liquid-mounted resilient filled seal, primary  
 LM2 = Rim-mounted shield  
 LMW = Weather shield  
 VM1 = Vapor mounted resilient filled seal, primary  
 VM2 = Rim-mounted secondary  
 VMW = Weather shield

<sup>3</sup>Indicate weight percent of the listed substance. Include the total volatile organic content in parenthesis

<sup>4</sup>Other than floating roofs

<sup>5</sup>Gas/vapor flow rate the emission control device was designed to handle (specify flow rate units)

<sup>6</sup>Use the following codes to designate basis for estimate of control efficiency:

C = Calculations  
 S = Sampling

---

PART E NON-ROUTINE RELEASES

---

10.23 Indicate the date and time when the release occurred and when the release ceased or was stopped. If there were more than six releases, attach a continuation sheet and list all releases.

<u>Release</u>	<u>Date Started</u>	<u>Time (am/pm)</u>	<u>Date Stopped</u>	<u>Time (am/pm)</u>
<u>1</u>	<u>1/21/88</u>	<u>2:45 pm.</u>	<u>1/21/88</u>	<u>2:48 pm.</u>
<u>2</u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>
<u>3</u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>
<u>4</u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>
<u>5</u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>
<u>6</u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>

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10.24 Specify the weather conditions at the time of each release.

<u>Release</u>	<u>Wind Speed (km/hr)</u>	<u>Wind Direction</u>	<u>Humidity (%)</u>	<u>Temperature (°C)</u>	<u>Precipitation (Y/N)</u>
<u>1</u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>
<u>2</u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>
<u>3</u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>
<u>4</u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>
<u>5</u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>
<u>6</u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>

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☐ Mark (X) this box if you attach a continuation sheet.

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# APPENDIX I: List of Continuation Sheets

Attach continuation sheets for sections of this form and optional information after this page. In column 1, clearly identify the continuation sheet by listing the question number to which it relates. In column 2, enter the inclusive page numbers of the continuation sheet for each question number.

Question Number (1)	Continuation Sheet Page Numbers (2)
4.02 MSDS-Dow Chemical	1-7
4.02 MSDS-ICI	8-12
4.02 MSDS-Mobay	13 - 20
7.01 Foaming Process Flow Chart	1,2
7.01 Rebond Process Flow Chart	3
7.03 Foaming Process Flow Chart	1,2
7.03 Rebond Process Flow Chart	3
7.04 Foaming	1-8
7.04 Rebond	9-12
7.05 Foaming	1-3
7.05 Rebond	4,5
7.06 Foaming	1-8
7.06 Rebond	9-13
9.02 Rebond	1
9.03 Rebond	1
9.04 Foaming Associated Work Areas	1,2
9.04 Rebond Associated Work Areas	3
9.05 Rebond	1
9.06 Foaming	1
9.06 Rebond	2-4

☒ Mark (X) this box if you attach a continuation sheet.

## APPENDIX I: List of Continuation Sheets

Attach continuation sheets for sections of this form and optional information after this page. In column 1, clearly identify the continuation sheet by listing the question number to which it relates. In column 2, enter the inclusive page numbers of the continuation sheet for each question number.

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☐ Mark (X) this box if you attach a continuation sheet.



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